RHYTHM OF THE SEA

COASTAL ENVIRONMENTAL PROFILE OF SAN VICENTE, PALAWAN

BY

YASMIN D. ARQUIZA

Coastal Resource Management Project

of the

Department of Environment and Natural Resources

supported by the

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Yasmin D. Arquiza

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Ricardo Buenaflor, Jr.

Photos:
R. Buenaflor Jr. and Y.D. Arquiza

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PREFACE and ACKNOWLEDGMENTS

Rhythm of the Sea provides a baseline of information about the coastal environment of San Vicente, Palawan. This profile is intended to assist with management planning at the barangay and municipal government levels in San Vicente. It can also serve as a guide for other municipalities in Palawan.

Coastal resource management (CRM) cannot occur without informed participants and stakeholders in the process. Also, CRM cannot proceed without knowledge and valid data on the condition and status of the resources to be managed. This profile provides both a baseline on the environment as well as the people and their economy. Because people are the entry point for CRM, people, their activities and their problems are a focus of this profile.

Rhythm of the Sea is produced as part of the Coastal Resource Management Project's activities in San Vicente, Palawan. The project aims to develop and encourage leaders among local communities, non-governmental organizations, and government units to work for CRM. It is jointly implemented by the Department of Environment and Natural Resources with the Department of Agriculture-Bureau of Fisheries and Aquatic Resources, local government units, non-governmental organizations and other assisting agencies. Technical and administrative support is provided by Tetra Tech Environmental Management, Inc.

A few individuals were instrumental in the production of this book, in addition to all the local community and government participants mentioned in Chapter One. Overall technical editing was done by Alan White and Asuncion Sia. Editorial comments were provided by Benjamin Francisco, Tom Bayer and Sandra Zicus. The coordination efforts of Mel Corkum in Palawan; the comments and support of former Mayor Antonio Alvarez as well as other municipal officials, the editing of Evangeline Miclat and the layout and word processing work of Leslie Tinapay of Coastal Resource Management Project were all essential contributions.

FOREWORD from the MAYOR

Many Filipinos share the traditional view that local government officials are in office to see to their every need, from womb to tomb. Indeed, in my early days in politics, I, too, had the notion that it was my job to provide the people of San Vicente everything they needed, and that was literally what I did, or at least tried to do. It took three years and thousands of requests for financial and commodity assistance before it dawned on me that I needed a different approach to address people's problems.

During my second term as mayor, I heard about a project in Central Visayas that had the community actively managing, protecting and guarding their natural resources. In realizing that this could spell the difference in the sustainability of their resource use and livelihood, I sought more information.

Impressed, I set about replicating this project in San Vicente. It was not easy. Most politicians still subscribed to the outdated notion that resource development projects were "high risk, low impact projects", generating few photo opportunities or "monuments" that would stand testimony to their efforts to get re-elected. Also, the few who controlled the resources in the municipality objected to the empowerment of community members who would someday be potential leaders conversant about their rights and able to protect these rights. Moreover, many among the community members themselves viewed government projects as doleouts and would rather be given farm inputs or fishing gear than taught sustainable coastal resource management practices.

Fortunately, the people who gave the project a chance were greater in number and strong in their resolve to try something new. It is to these people's credit that the Strategic Environmental Plan-San Vicente, Palawan, adopting the successful strategies of the Central Visayas project, was implemented in our municipality. Realizing their inherent role as managers of their natural resources, these people — upland and small rainfed lowland farmers, forest dwellers and fisherfolk — worked to enhance the integrity of the environment. Today, they are involved in the planning, implementation and monitoring of resource management activities in their areas.

When the Coastal Resource Management Project came to San Vicente, it found a municipality with a people steeped in participatory processes and evolving towards self-reliant fishing and farming communities, and taking part in making decisions regarding resource use and the implementation of these decisions. The Project took the right track when it started project activities with the participatory coastal resource assessment. For a community jealous of its new-found role, involvement in the fundamental step towards determining its future directions is vital. Ms. Yasmin Arquiza presents to us in this book the results of this important collaboration between the Coastal Resource Management Project and the people of San Vicente.

(Sgd) Antonio C. Alvarez
Former Municipal Mayor

ACRONYMS

ADA	agricultural development area
BMC	barangay management council
CENRO	Community Environment and Natural Resources Office
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CORIAL	Coastal, Ocean, Reef and Island Advisors Ltd.
CRM	coastal resource management
CRMP	Coastal Resource Management Project
DA-BFAR	Department of Agriculture-Bureau of Fisheries and Aquatic Resources
DENR	Department of Environment and Natural Resources
ECAN	Environmentally Critical Areas Network
ECC	environmental compliance certificate
EIS	environmental impact statement
GPS	global positioning system
IEE	initial environmental examination
IMA	International Marinelife Alliance-Philippines
IUCN	International Union for the Conservation of Nature
LGU	local government unit
LTC	Lanas, Tago-tago, Capitol (sitios in San Isidro, San Vicente)
MPN	most probable number
NGO	non-governmental organization
NIPAS	National Integrated Protected Areas System
PALECO	Palawan Electric Cooperative
PCRA	participatory coastal resource assessment
PCSD	Palawan Council for Sustainable Development
PCSDS	Palawan Council for Sustainable Development Staff
SEP	Strategic Environmental Plan
SEP-SVP	Strategic Environmental Plan-San Vicente, Palawan
SPIADP	Second Palawan Integrated Area Development Project
SUML	Silliman University Marine Laboratory
TAO	Technical Assistance Office
TDA	tourism development area
TDC	Tugdunen, Dapi, Coroan (sitios in Port Barton, San Vicente)
URTI	upper respiratory tract infection
USAID	United States Agency for International Development

COMMONLY USED LOCAL TERMS

Local Terms (General)	English Translation
amihan	northeast monsoon
antipara	goggles
baha mula sa umaapaw na ilog	floods from overflowing river
bahura	coral reef
bakawan	mangrove
banlik	silt
baybayin	beach
binabaha kung minsan, kulay putik ang tubig at ilalim	seasonal sedimentation, heavy sediment load in the water column and at the bottom
buhay na bahura	live coral
buhay na lusay	live seagrass
bukana	estuary
busero	compressor-aided diver
dagat	marine zone
daplak	north wind
dinagko nga pangisda	commercial fishing
gasangan, bahura	coral reef
ginagawang palaisdaan	converted to fishpond
habagat	southwest monsoon
hibasan	reef flats
hindi maganda, sira	low quality/poor condition
hindi malapad	not wide
hindi nagalaw	undisturbed
hunasan	reef flats
ilegal na pag-angkin ng nipa	illegal claims on nipa stand
isdang gagmay	small fish
kakulangan sa gamit (walang kapalit sa nasirang arong)	lack of equipment (no replacement for destroyed fish aggregating device)
kalagayan	condition
kanal	passes, channels
katamtaman	moderate
katunggan	mud flats
kulang sa tubig na malinis	lack of clean/potable water
kulay putik na talaga	permanent sedimentation of bottom
lapus-lapus	blowhole, hole in the rocks
lupa	terrestrial zone
lusay, lusayan	seagrass
mababang bilihan ng lupa	low prices for land
maganda	good

makasaysayang lugar	historical place
malapad	wide
maraming pagbabago	many changes
masyadong mahigpit na batas	overly strict laws
may burak na nakalutang sa tubig	suspended sediments
may dumi	some pollution, erosion
mga dayo na mangingisda	fishers from outside
minahan	mining area
naagnas na baybayin	beach erosion
nakakasirang paraan ng pangingisda	destructive fishing
natumbang kahoy	fallen trees
ninanakaw ang isda at sinisira ang arong/payaw	fish are stolen/fish aggregating device are vandalized
pagguho ng lupa	landslide
pagkawasak sa puy-anan sa yaman-dagat	habitat destruction
pagputol sa bakawan	mangrove cutting
pagtukod ug fishpond	conversion to fishpond
pamayanan, puy-anan	settlement
pangko	indigenous sailboat
pantalan	port
panyapak, frogman (slang)	fins
parke	park
pasyalan	recreational area
pinakamaganda	excellent
pinuputol para panggatong, pagpapatayo ng bahay	cutting for firewood, poles
pinutol ang mga kahoy	cut trees
polusyon	pollution
problema sa samahan (wala pa, hindi aktibo, hindi nagkakaisa)	problem in organization (not organized, not active, no unity)
putik	siltation, soil erosion
puy-anan	house
rawis	fringing reef
salatan	south wind
santwaryo	sanctuary
sari-sari store	variety store/general merchandising store
sirang tulay	bridges in state of disrepair
sobrang dumi	heavy pollution
sobra-sobrang pangingisda	overfishing
subasko	squall
tandol, punta	point
torotot	snorkel
walang burak	no sediment
walang buyer ng isda	no buyers of fish catch
walang health center/kulang sa gamot	no health center, lack of medicines
walang ibang kabuhayan sa taghirap na mga buwan	no alternative livelihood during lean months
walang kalsada	no roads
walang kasiguruhan sa tirahan	no security of land tenure
walang paaralan para sa mga bata	no school
walang pagpuputol na nagaganap	no cutting

LIST OF TERMS

RESOURCES

Fish

Local	Common English
anay-anay or abay-abay	giant basslet
agahon	red snapper
alumahan	mackerel
asohos/asu-os/aso-os	whiting
bakoko	sweetlip
balo	needlefish
banak	mullet
bangsi	flying fish
bangus (semilya)	milkfish fry
bisugo	threadfin bream
burao	mackerel, tuna
dalagang-bukid	fusilier
danggit	rabbitfish
dapa	sole
darag-darag	gray snapper
dilis	anchovy
espada	cutlassfish
galunggong	scad
hasa-hasa	mackerel
haol-haol	sardine
hilo	eel
kabayo-kabayo	seahorse
kalapato	hunchback trevally
kalaso	lizardfish
emperor bream	
katambak	emperor bream
lapu-lapu	grouper
liwit	hairtail
mamsa	jack
mangagat	snapper
matambaka	big-eyed scad
maya-maya	snapper
mulmol	parrotfish
pak-an	hard-tailed scad
palata	damselfish
pagi	stingray
pating	shark
rompe	barracuda
sagisi	threadfin bream
salayginto	yellow-striped crevalle
salay-salay	crevalle, trevally
salmollete	goatfish
sapsap	slipmouth
sulid	fusilier
suno	grouper

Local	Common English
kanuping	*karaho* lizardfish
talakitok	jack
tambakol	yellow-fin tuna
tamban	sardine
tangigue	spanish mackerel
torsillo	seapike
tulingan	frigate tuna

Shells

Local	Common English
bagasay	n.t.
balingsara	n.t.
budyong	helmet shell
bulatok	n.t.
halaan	venus shell
kapinan	abalone
kaykay	n.t.
kibaw	n.t.
lapas	abalone
liswi	cone shell
lumban	cowry
payong-payong	turban shell
punaw	venus shell
sa-ang	spider shell/conch
sagisi	n.t.
samong	top shell
sanang	n.t.
saroksarok	n.t.
sihi	top shell
sikad-sikad	n.t.
sisi	oyster
suso	snail
tagitis	n.t.
tahong	mussel
taklobo	giant clam
taktakon	dolphin shell
takurog	n.t.
talaba	oyster
tanakogon	n.t.
tarab	pen shell
tipay	ark shell

Other Invertebrates

Local	Common English
agokoy	fiddler crab
alamang	sergestid shrimp
alimango	mud/mangrove crab
alimasag	blue crab

n.t. - no translation

balatan	sea cucumber
banagan	spiny rock lobster *hipon* penaeid shrimp
lambay	blue crab
pitik	combfish
pugita	octopus *pusit* squid
pusit bahura	reef squid
sugpo	penaeid shrimp
tamilok	mangrove worm/ship borer
tauban	cuttlefish

Marine Mammals, Seabirds & Reptiles

Local	Common English
ahas dagat	sea snake
ambuhutan	whale
buwaya	crocodile
dugong	dugong
ibon dagat	seabird
kanaway	seagull
lawin	eagle
lumba-lumba	dolphin
pawikan	sea turtle
talabong	heron
wild duck	wild duck

Plants

Local	Common English
bakhaw	mangrove
baryaw-baryaw	seagrass
guso	seaweed
kahoy	wood
lato	seaweed
lumot	moss
nipa	nypa
samo	n.t.
uway	rattan

Others

Local	Common English
bato	stones, pebbles
buhangin	sand
silica	silica sand

USES

Fishing Gear & Practices

Local	Common English
baklad	fish corral
baling	beach seine
bitana	beach seine
bondak-bondak	hook and line
bubo sa alimango	crab trap
bubo	fish trap
ganti-ganti	squid jigger
hipon-hipon/orang-orang	jigger
kitang	bottomset longline
kitang-pamating	longline for shark
kurantay	encircling gill net for herring
lambat pang-danggit	net for rabbitfish
lambat sa semilya ng bangus	net for milkfish fry
lambat-alimasag	crab gill net
lambat-palutaw	surface gill net
lambat-pamating	gill net for shark
lambat-pamusit	net for squid
lambat-panolid	net for fusilier
paanod	drift gill net
pamalo	net for needlefish
pamana	spear
pamana sa pusit bahura	spearfishing for reef squid
pamana sa tauban	spearfishing for cuttlefish
pamo	drift gill net
pangawil	hook and line
pangugita	jigger
pantihan/lambat-palubog	bottom set gill net
rabnot	reef seine
sikad-sikad	net for schools of fish nearshore
subid	longline
talakop	ring net
timing	hook and line for threadfin bream

Chapter 1
PROFILE, PLAN, ACTION!
(Introduction)

On the windswept coast of western Palawan lies the town of San Vicente, one of the six learning areas of the Coastal Resource Management Project (CRMP). As a result of the pioneering efforts of its local officials in environmental protection, San Vicente was selected as one of the models for CRMP, which embraces coastal resource leadership as its major theme.

As a result of the pioneering efforts of its local officials in environmental protection, San Vicente was selected as one of the models for CRMP.

Among the important marine resources of San Vicente are:

- 160 species of finfish
- 163 species of corals and thousands of species of other invertebrates
- 96 species of algae
- a diverse collection of seagrass
- 22 species of mangrove

Like most coastal towns across the country, however, San Vicente faces a host of issues and management concerns that need to be addressed. Most of the issues identified by residents fall under the following categories:

- impact of land-based activities (siltation, pollution, land reclamation, beach erosion, landslides, floods)
- resource use (cutting of mangroves/conversion into fishponds, habitat destruction, illegal fishing, "strict" laws, organizational problems, lack of fishing gear, lack of buyers of fish catch, selling of agricultural land/beachfront)
- resource access (presence of outside fishers, overfishing, theft of fish and destruction of artificial reefs, illegal nipa claims, restricted access to fishing grounds)
- government and social services (lack of land ownership, lack of alternative livelihood during lean months, lack of schools, lack of health services, lack of clean water, no roads, damaged bridges)

Much of the input for this document came from the participatory coastal resource assessment (PCRA) done in early 1997 in San Vicente. The PCRA team spent nearly two months (February 14 to March 24) along the San Vicente coast, braving monsoon winds to conduct workshops and collect data in 27 fishing villages. In addition, we gathered information from previous profiles and survey/research reports written by government, academic, and private agencies about the coastal environment of the municipality. Then we analyzed, arranged and rearranged all data to create this profile.

This profile provides the baseline information necessary for planning an appropriate course of action in managing the municipality's coastal resources.

We hope this profile will prove useful to the coastal communities of San Vicente, as well as to national and provincial-level policy makers. It provides the baseline information necessary for planning an appropriate course of action in managing the municipality's coastal resources.

Using the PCRA process described in the next chapter, a multi-agency team composed of personnel from the Technical Assistance Office (TAO) of San Vicente Mayor Antonio Alvarez, CRMP, the environmental media group *Bandillo ng Palawan*, the consultancy firm Coastal, Ocean, Reef and Island Advisors Ltd. (CORIAL) of Hawaii, and Peace Corps-Philippines contributed to the collection of data. Sources of other data include barangay and municipal profiles prepared by the Mayor's staff, as well as surveys and

research reports done by the Silliman University Marine Laboratory (SUML) and International Marinelife Alliance-Philippines (IMA).

The resource persons and documentation team wish to thank the following people for their valuable contribution to this profile:

- Manong Coring of Catalat Island, Chona of Gawid, *Kagawad* Suplito of Binga, and other villagers who welcomed us into their homes and kitchens;
- Tay Daming and his boat assistants Bebot and Babymax (with apologies to the bakery) who went beyond the call of duty to cook for us and invite participants to the PCRA sessions;
- Teddy, Dongdong, Pons, Nonoy, and Blanding who taught us the other meaning of Community Organizer (in the field, the community organizer also serves as *caldero* [cooking pot] operator);
- Joe Buenaobra, Thor, Susan Gavino, and Resource Management Center staff for sharing with us their valuable resources;
- Sammy Magbanua for lending us his Acer computer and helping us meet our deadline; and
- members of the PCRA team who assisted the fishers of San Vicente in this activity.

Our deepest gratitude goes to the fishing communities of San Vicente who provided much of the information contained in this report. After spending most of the night fishing and most of the day selling and/or drying their catch, they graciously took time to join the research team in resource mapping and interview sessions. Their active participation gives us reason to believe that, indeed, the future of marine conservation lies in the collective efforts of fishing communities whose lives are intertwined with the* Rhythm of the Sea*.

***The fishers' active participation gives us reason to believe that indeed, the future of marine conservation lies in the collective efforts of fishing communities whose lives are intertwined with the* Rhythm of the Sea.**

THE PCRA TEAM

TECHNICAL ASSISTANCE OFFICE
(Office of the Mayor, San Vicente)

Hector "Teddy" Mandal
Roberto "Dong-dong" Alarde
Ildefonso "Pons" Bargayo
Edwin "Nonoy" Tamondong
Blandino Pacursa
Jose Buenaobra

COASTAL RESOURCE MANAGEMENT PROJECT

Mel Tagudar-Corkum
Alan White
Evelyn Deguit

CORIAL

Susana Siar
James Maragos

BANDILLO NG PALAWAN

Yasmin Arquiza
Ricardo "Jing" Buenaflor, Jr.

ENVIRONMENTAL EDUCATION AND COMMUNICATION PROJECT

Susan Gavino

OTHERS

Paul Sgarlato - Peace Corps Volunteer
Ma. Fe Divinagracia - Silliman University
John Pontillas - Palawan Council for Sustainable Development Staff
Amalio "Tay Daming" Barbas, Jr. - Boatman
Delany "Bebot" Ventilacio - Boat Assistant
Dindo Pangadlo - Boat Assistant
Jovita Borres - volunteer from the Second Palawan Integrated Area Development Project
Delany "Bebot" Ventilacio - Boat Assistant
Dindo Pangadlo - Boat Assistant
Jovita Borres - volunteer from SPIADP

PCRA Team on Double Island, Poblacion, San Vicente, March 1997

4 Rhythm of the Sea

Chapter 2
ALL ABOUT PARTICIPATORY COASTAL RESOURCE ASSESSMENT
(Some Explanatory Notes)

Participatory coastal resource assessment, or PCRA, is a method of determining the status of the coastal environment in a given area with the help of local villagers. Through the PCRA process, both residents and outside facilitators are able to get a comprehensive picture or profile necessary for making plans and taking action towards the proper use of marine resources. For the benefit of local residents, we translated PCRA to *Sama-samang Pagsusuri ng Yamang Dagat*.

Through the PCRA process, both residents and outside facilitators are able to get a comprehensive picture or profile necessary for making plans and taking action towards the proper use of marine resources.

The PCRA team in San Vicente took guidance from a handbook (Walters et al 1998). Since the process was new to us, however, the procedures evolved as we went along. We made good use of colorful visual aids to make it easier for fisherfolk to understand the process.

A typical day for us started with a boat ride at 8 a.m. to our destination, where we looked for our contact persons and scouted for a suitable venue. We quickly learned to be very flexible about the venue, which could be anywhere from a chapel to someone's yard in front of the beach. Before we could start the PCRA process, we usually had to wait

PARTICIPATORY COASTAL RESOURCE ASSESSMENT

- **First step towards the management and protection of coastal resources**
- **A process that values the views, opinions and knowledge of coastal resource users**

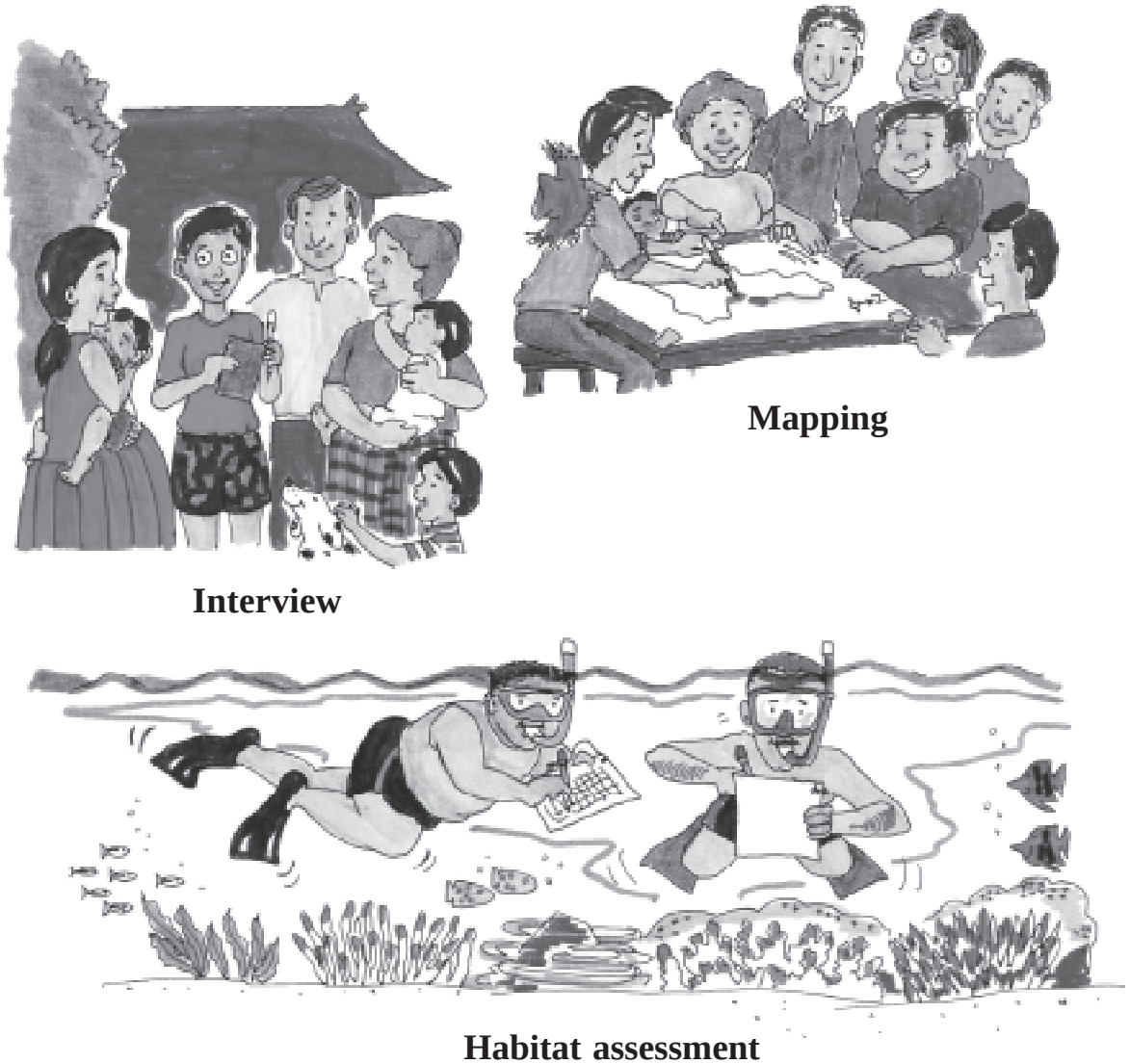


Figure 2.1. The Participatory Coastal Resource Assessment process.

until the fishers arrived from the sea, sold their catch, and had breakfast. Three basic activities were undertaken: resource mapping, group interviews, and habitat assessment (Figure 2.1).

RESOURCE MAPPING

Resource mapping involves placement of vital coastal data on a 1:20,000 scale map of each barangay. In San Vicente, four types of data were used: location of coastal habitats, resources, uses, and issues. **Habitats** were drawn on the map using a color coding system to illustrate the eight kinds of habitat: yellow for sandy beaches, brown for rocky shoreline, orange for inshore flats, dark green for mangroves, blue for estuary, dark blue for passes or channels, light green for seagrass, and red for coral reefs (Figure 2.2).

Resource mapping involves placement of vital coastal data on a 1:20,000 scale map of each barangay.

Next, the fishers named the most abundant fish and other **resources**

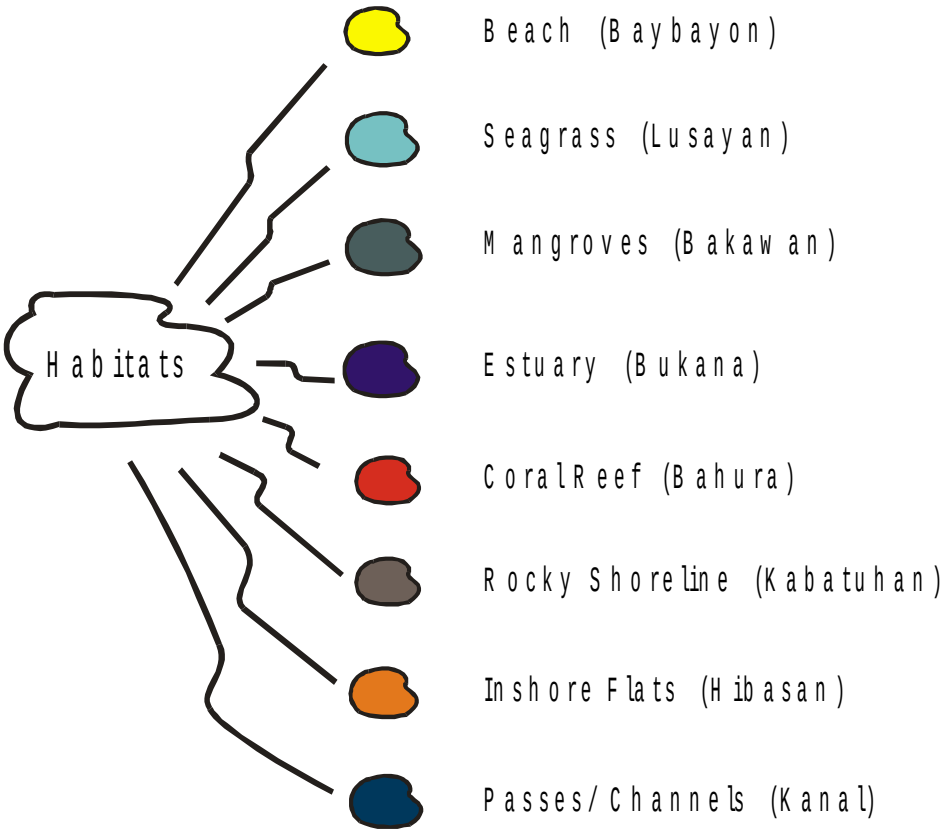


Figure 2.2. Habitats identified by the PCRA participants in San Vicente, 1997.

found in their coastal territory. These resources were given numbers, which the participants placed on the map according to the location of each resource (Figure 2.3).

The fishers then described the fishing methods they employed and the other **uses** they had for coastal resources. Again, they marked these on the map, this time with the use of letters as symbols. Finally, they identified the most pressing and relevant **issues** facing the community, using Roman numerals to mark the areas on the map where such issues occurred.

After the mapping session, the same participants completed **Transect Diagrams**

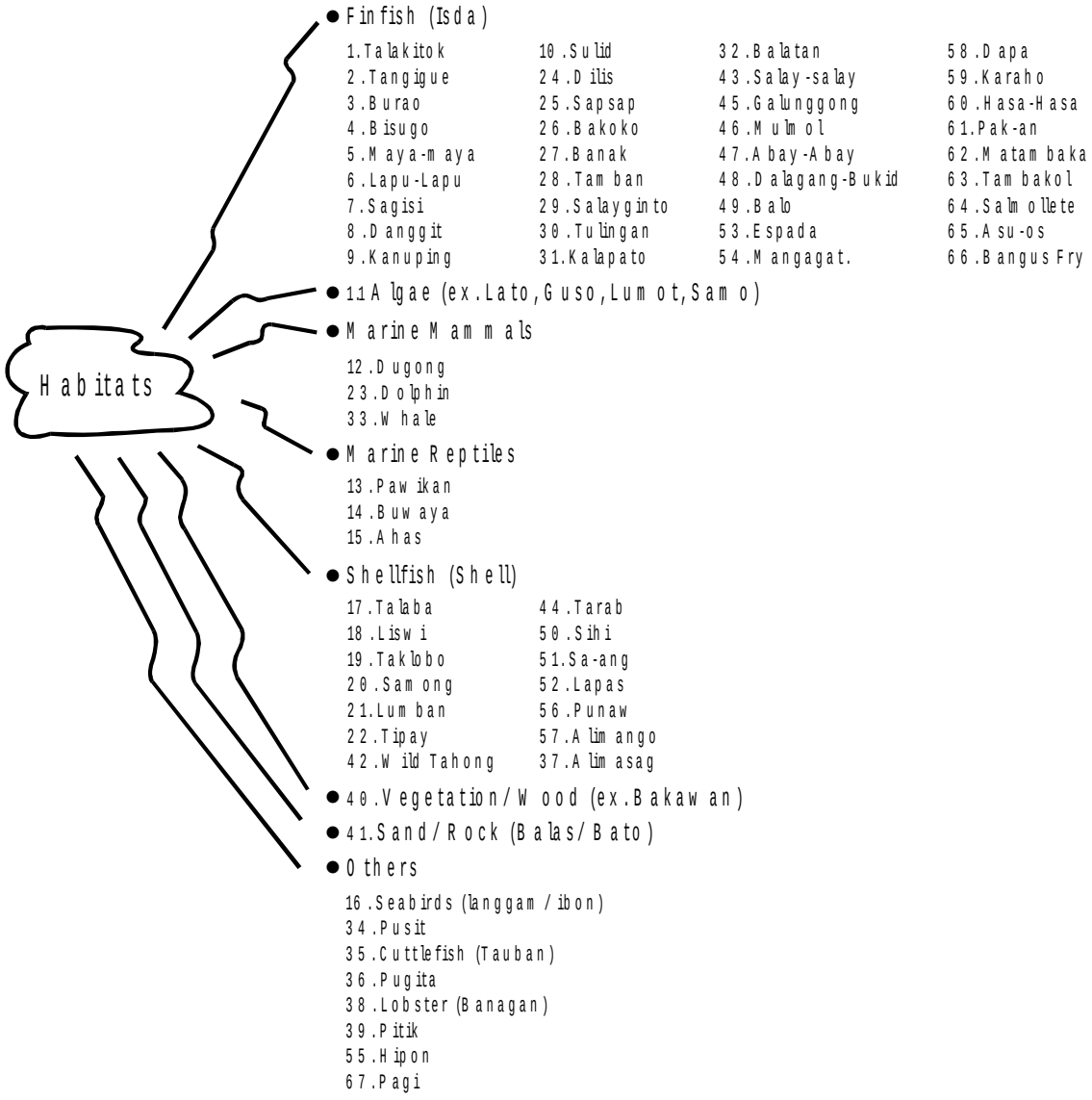


Figure 2.3. Coastal resources identified by the PCRA participants in San Vicente, 1997.

(Figure 2.4) that showed the resources, uses, and issues in relation to various habitats. The PCRA team discovered that it was easier and less time-consuming for the participants if one facilitator completed the diagram while the resource mapping was being done. The fishers also prepared **Calendar Maps** showing monthly rainfall and wind patterns and depicting the seasonal use of fishing gear (Figure 2.5). Finally, they took a trip back in time, usually to the year when they first settled in the village, to come up with a **Trend Map** showing fish catch through the years (Figure 2.5).

GROUP INTERVIEWS

Given the short time available, we found it difficult to do random interviews. So, instead of going from house to house, we gathered together PCRA participants for group interviews.

Group interviews proved to be effective in getting critical data, such as number of households, household size, availability of social services, sources of livelihood, land and boat ownership, seasonality of fishing gear, activities of women, marketing of fish catch, sources of credit, and issues and problems faced by the community. The familiarity of the villagers with each other made it easier for them to confirm or challenge the responses of participants to the questions asked during the interviews. Most participants were female, many of them with children in tow.

HABITAT ASSESSMENT

After the resource mapping and group interviews, most of the participants got together to evaluate four coastal habitats in their village according to a simplified set of criteria (Figure 2.6). Since the residents were familiar with their area, it was easy for them to assess the condition of these habitats. Disagreements were rare in this session, which served as an eye-opener to many residents who used to take their environment for granted. Data for beaches, mangroves, and seagrass were recorded, and the assessment of coral reefs was validated through field exercises.

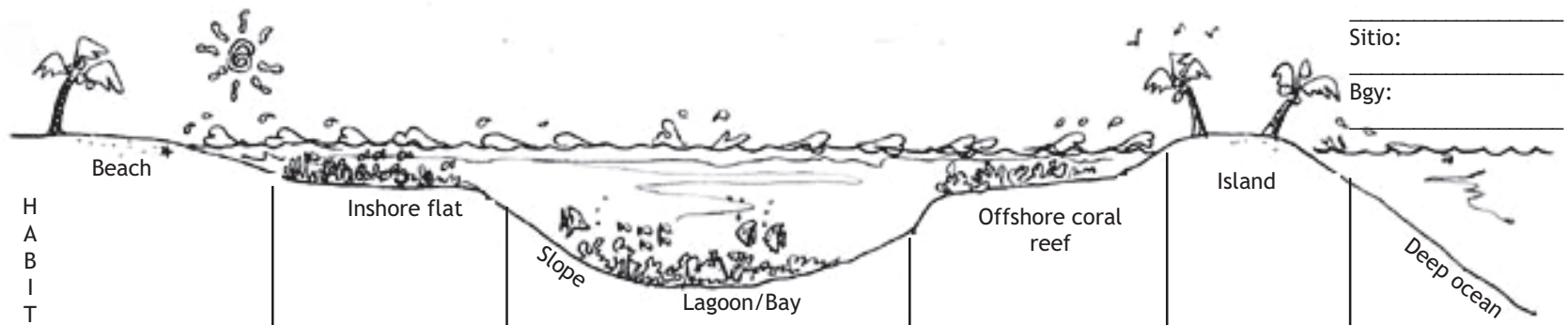
Since the residents were familiar with their area, it was easy for them to assess the condition of these habitats.

Volunteers helped the PCRA team identify a large section of the coral reef in the area, and later accompanied some members of the team in checking the condition of the corals through snorkel observation. The snorkelers surveyed 10 designated underwater stations, examining a one-

Date: _____

Sitio: _____

Bgy: _____



HABITAT					
RESOURCES					
USES					
ISSUES					

Figure 2.4. Basic format for transect diagrams.

square meter patch of corals at each stop (Figure 2.7). On a waterproof slate they recorded the percentage of sand, rubble, rock, dead standing coral, live hard coral, and soft coral found in each station. Later, they computed the average for all 10 stations to come up with a figure that represented the approximate condition of the reef (Figure 2.8).

In preparation for the implementation of PCRA in the barangays, a two-day training was held in the San Vicente poblacion for leaders of fishers' associations and other key persons in the coastal villages. During the training, Hector Mandal of the Strategic Environmental Plan-San Vicente Project (SEP-SVP) presented the latest statistics on coastal resources and general information about the municipality. Ma. Fe Divinagracia summarized the results of marine surveys conducted in May 1996 by Silliman University for CRMP. Consultant Susan Gavino of the Environmental Education and Communication Project, also funded by USAID, presented the findings of a study on environmental awareness among local government officials in Palawan. CRMP Coordinator Alan White provided an overview of coastal resource management and explained the vision and goals of CRMP. Consultants Jim Maragos and Susan Siar of

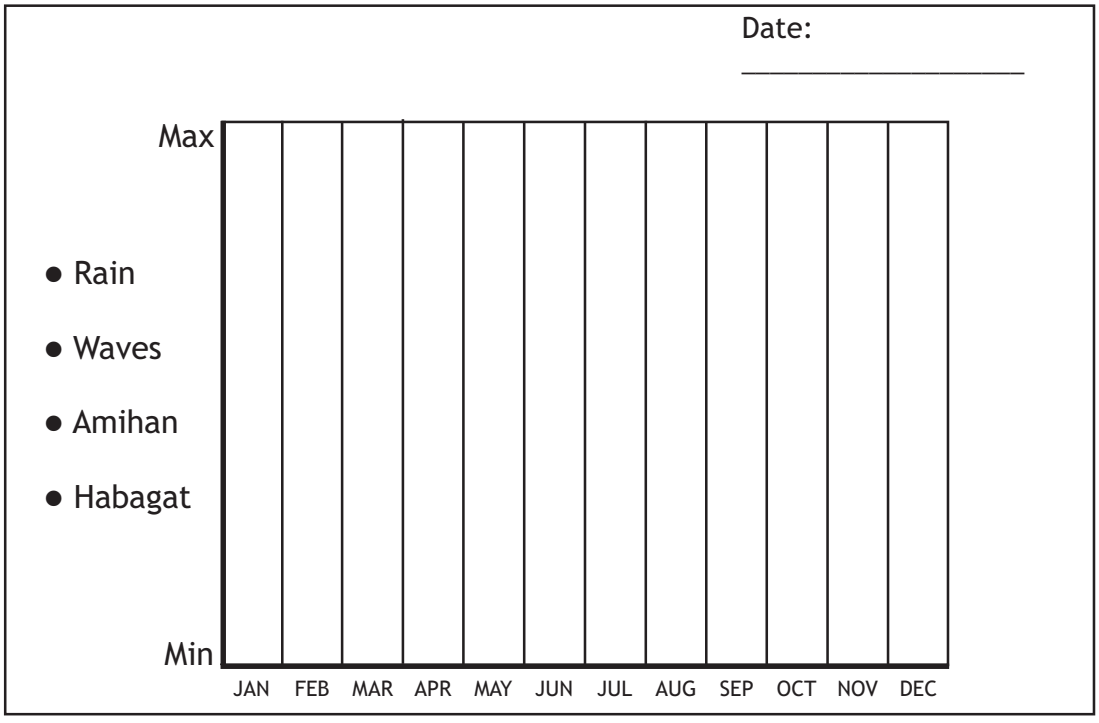


Figure 2.5. Basic format for trend and calendar maps. This is used to plot rainfall and wind patterns, seasonal use of fishing gear, fish catch and other relevant trends.

The level of participation was very high, resulting in quality information. This is reflected in the barangay resource maps produced and the contents of this profile.

CORIAL conducted a "mini-PCRA" and explained the entire process. Actual resource assessment was conducted in Boayan Island the following day.

The PCRA team was heartened by the enthusiasm of coastal villagers. At first we were a bit apprehensive that participants would not be willing to reveal sensitive information, such as the location of coral reefs, which amounted to intellectual property for some of them. But we experienced very few occasions when the fishers showed reluctance in putting everything they knew on the map. In general, the level of participation was very high, resulting in quality information. This is reflected in the barangay resource maps produced and the contents of this profile.

CONDITION (Kalagayan)	BEACH (Baybayin)	SEAGRASS (Lusayan)	CORAL REEF (Bahura)	MANGROVE (Bakawan)
Excellent (Pinakamaganda)	Undisturbed wide beach (Hindi nagalaw, malapad)	76-100% Live seagrass, no sediment (Buhay na lusay, walang burak)	76-100% Cover live coral (Buhay na bahura)	76-100% No cutting or disturbance (Walang pagputol na ginaganap)
Good (Maganda)	Undisturbed narrow beach (Hindi nagalaw, hindi malapad)	51-75% Suspended sediments only (May burak na nakalutang sa tubig)	51-75% Cover live coral (Buhay na bahura)	51-75% Cutting for firewood, poles (Pinuputol para panggatong, pagpapa-tayo ng bahay)
Fair (Katamtaman)	Some pollution, erosion, fallen trees (May dumi, natumbang kahoy)	26-50% Seasonal sedimentation on bottom (Binabaha kung minsan, kulay putik ang tubig at ilalim)	26-50% Cover live coral (Buhay na bahura)	26-50% Fishponds (Ginagawang palaisdaan)
Poor/Low (Hindi maganda/ sira)	Heavy pollution, seawalls, major erosion, modification (Sobrang dumi, maraming pagbabago)	0-25% Permanent sedimentation on bottom (Kulay putik na talaga, ex. pier)	0-25% Cover live coral (buhay na bahura)	0-25% Land or trees removed, reclamation (Pinutol ang mga kahoy)

Figure 2.6. Simplified set of criteria for habitat assessment.

Station	Sand (Buhangin)	Rubble (Durog)	Rock (Malaking bato)	Dead Standing Coral (Patay na Bakawan)	Hard Living Coral (Buhay na Bakawan)	Soft Coral (Malambot)	TOTAL (%)	REMARKS
1	50			50			100	
2	25		25	50			100	
3		50	50				100	
4				100			100	
5								
6								
7								
8								
9								
10								
TOTAL (%)								

Figure 2.7. Habitat assessment recorded on snorkeling slate.

SUBSTRATE SHEET

(Percent Cover)

Location: Panindigan
Transect: 10 station/observer
Method: Systematic snorkeling
Transect No.:

Recorder: Alan White, Paul Sgarlato, Ma. Fe Divinagracia
Date: Feb. 17, 1997
Tide:
Weather: Sunny/Slight wind
Water Visibility: 2-3 m

Depth	1	2	3	Mean
Substrate				
Sand & Other	10	18	30	19.3
Coral Rubble	Ø	21	5	8.7
Rock & Block	36	1	27	21.3
Dead Standing Coral	1	37	5	14.3
Total Sediment	47	77	67	63.7
Hard Coral	53	23	33	36.3
Soft Coral	Ø	Ø	Ø	Ø
Total Coral	53	23	33	36.3
Seagrasses				
Algae	/			
Sponges				
Total	drastic changes in depth from 5 m to 2.5 m			
Notes	Large areas of coral changing to mushroom coral to rock to sand			

Figure 2.8. Substrate sheet showing approximate condition of the reef.

Chapter 3
LIFE IN THE TOWN
(Municipal History and Socio-economic Profile)

In 1952, migrants from Manamoc island in Cuyo, one of the oldest settlements in Palawan, arrived in what is now the present town site of Barangay Poblacion. At that time, the place was called *Malagnang* (muddy) and was part of the capital town of Puerto Princesa. The arrival of more settlers from Cuyo and its neighboring island, Agutaya, led to the creation of the municipality of San Vicente (after Saint Vincent Ferrer, the town's patron saint) in June 1969 by virtue of Republic Act 5821.

The arrival of settlers from Cuyo and its neighboring island, Agutaya, led to the creation of the municipality of San Vicente (after Saint Vincent Ferrer, the town's patron saint) in June 1969.

It took three years before San Vicente could function as a municipality carved out of two neighboring towns. In 1972, the municipal councils of Puerto Princesa and Taytay passed successive resolutions (in May and June, respectively) giving autonomy and some of their territories to San Vicente. That same year, the municipality of San Vicente held its first election. The mayors who have served the town since then are:

1972 to 1979	Digno Pablico
1979 to 1986	Daniel Yayen
1986 to 1998	Antonio Alvarez

This chapter contains information on San Vicente's economy and social structure, an important input to planning for coastal resource management.

This chapter contains information on San Vicente's economy and social structure, an important input to planning for coastal resource management. It includes consolidated data taken from results of group interviews conducted during the PCRA process in the coastal barangays (Table 3.1), as well as data from secondary sources. More specific details about the coastal barangays are presented in the next chapter.

The TAO of the municipal government provided the following information about San Vicente:

NUMBER OF BARANGAYS:	10
NUMBER OF SITIOS:	64 (coastal 38, inland 26)
POPULATION:	21,016 (1995 census)
POPULATION GROWTH RATE:	6.65%
PER CAPITA INCOME:	P5,252 (1986 data)
LAND TENURE:	80% of farmers own their land (1986 data)
TOP ETHNIC GROUPS:	Cebuano, Agutaynon, Tagalog, Cuyunon
LANGUAGES SPOKEN:	Tagalog, Cebuano, Cuyunon, Agutaynon, Ilonggo
RELIGION:	Roman Catholic, Iglesia ni Kristo, Pentecostal, Baptist, Seventh Day Adventist

The working age (15 to 64 years old) population in 1995 was 12,069 — more than half the total number of residents; less than 50% was economically active.

THE LOCAL ECONOMY

A fourth-class municipality, San Vicente derives much of its revenues from the fishing industry. Data from the municipal government show that fishing is considered as the main source of income by about 48% of families, followed by farming (33%) and employment in the public or private sector (9%). The peak months for fishing are May to July, while the lean season is from November to January. Fish production from August to December 1996 reached 150,000 kg. Beach tourism, especially in Port Barton, is another source of livelihood.

Interviews also revealed the following sources of livelihood:

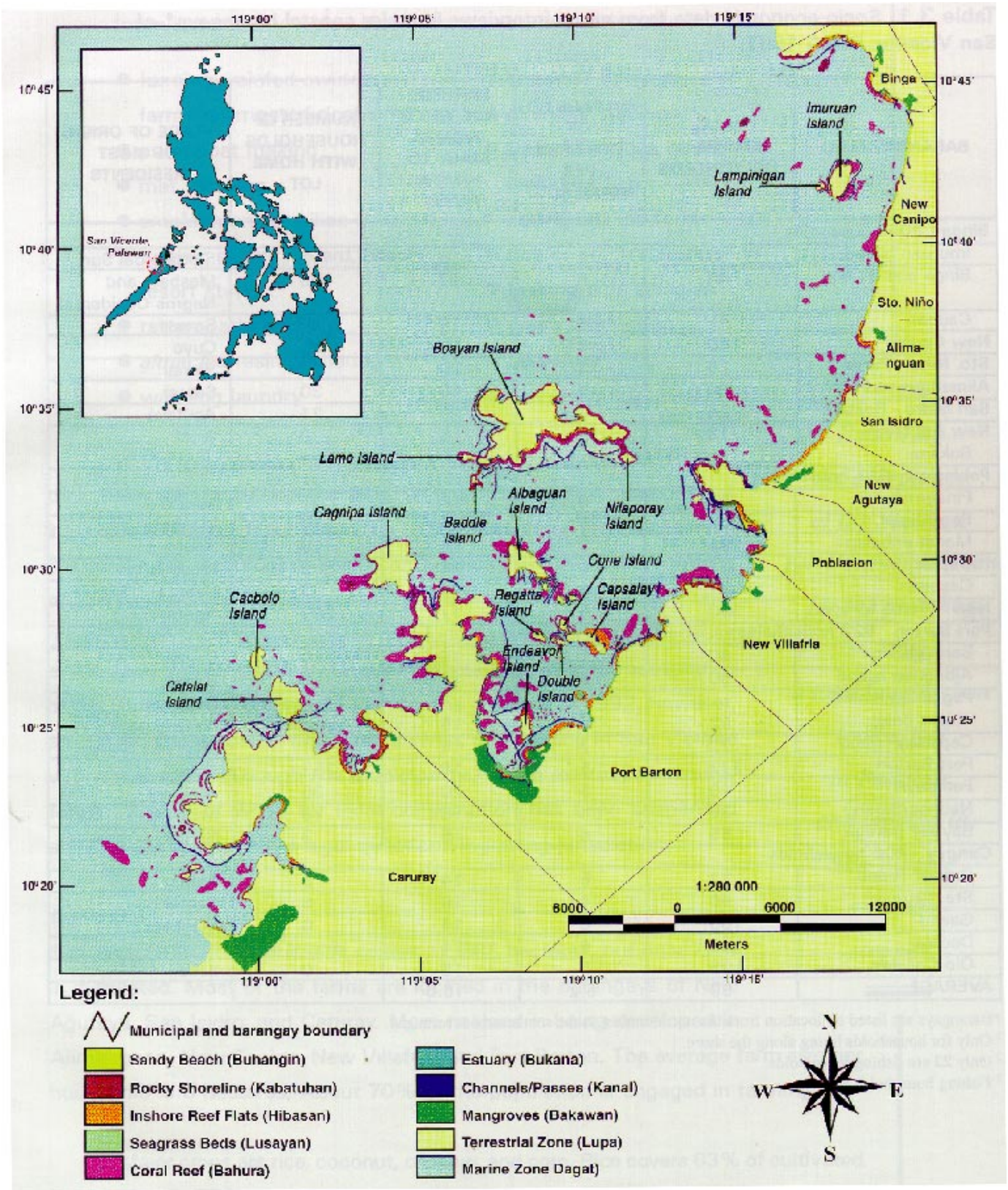


Figure 3.1. Coastal habitats and political boundaries of San Vicente, Palawan.

Table 3.1. Socio-economic data from group interviews in major coastal barangays* of San Vicente, PCRA 1997.

BARANGAY/ SITIO	TOTAL NUMBER OF HOUSEHOLDS	AVERAGE NO. OF CHILDREN PER HOUSEHOLD	EARLIEST AGE WHEN WOMEN START TO HAVE A FAMILY	NUMBER OF HOUSEHOLDS WITH HOME LOT	PLACE OF ORIGIN OF MOST RESIDENTS
Binga - 305 households					
Imuruan Island	60	4	18	9	Surigao del Sur
Binga and Boding	148	6	17	76	Masbate and Negros Occidental
Cauban	97	4	16	3[1]	Samar
New Canipo	140	5	19	all	Cuyo
Sto. Niño - Purok 1	26	5	20	0	Samar
Alimanguan - Purok 1	80	5	15	30	Samar
San Isidro - Bokbok	24	4	20	21	Agutaya
New Agutaya - Bukana	13	5	15	0	Bicol
Poblacion - 517 households					
Pinagmalucan	50	6	16	20	Mindoro
Panindigan	200	5	no data	10	Masbate
Macatumbalen	194[2]	7	16	19[3]	Agutaya
Daplac	36	6	14	5	Masbate
Casoyan	37	5	14	7	Cebu and Samar
New Villafria (proper)	300	5	17	240	Agutaya
Port Barton - 622 households					
Barongbong	40	7	15	29	Samar
Albaguen Island	60	6	14	0	Samar
Pagdanan (shore area only)	52	4	15	houses are on stilts	Cagayan de Oro
Capsalay Island	77	7	14	1	Masbate, Samar
Port Barton	273	5	18	253	Cuyo
Pamoayan	40	5	20	35	Agutaya
Naonao/Bigaho	25	4	16	18	Mindoro
Baybay Daraga	55	6	15	3	Samar
Caruray - 406 households					
Catalat Island	32	5	14	6	Samar
Sta. Cruz	46	4	16	6	Samar
Gawid	103	6	14	0	Masbate
Decala	120	6	14	almost all	Masbate
Old Caruray	105	5	18	0	Iloilo
AVERAGE	90	5.2	15.6		

*Barangays are listed by location from the northernmost to the southernmost barangay.

[1] Only for households living along the shore.

[2] Only 22 are fishing households.

[3] Fishing households only.

- farming (rainfed swidden farms or irrigated ricefields)
- pumpboat making
- mat weaving
- employment as silica mine worker, security guard, beach resort staff
- rattan gathering
- *almaciga* resin gathering
- washing laundry
- seaweed farming
- charcoal making
- trade in various goods including fish
- selling cooked food
- hog or poultry production
- making nipa shingles
- copra production
- carpentry
- cashew nut gathering

In the past, town residents also engaged in commercial logging, their main source of income after fishing. The earliest accounts of logging in this town date back to the 1930s, when foreigners discovered the rich timber resources of San Vicente. Since then, the primary forests of the municipality had attracted loggers like a magnet. In fact, until recently, San Vicente was known as a logging town, primarily because of the operation of Pagdanan Timber Products. Following the acceptance of the Strategic Environmental Plan for the province in 1992, however, a total logging ban took effect in Palawan, and logging in San Vicente virtually stopped. Though the municipality has an existing communal forest, cutting of wood for local consumption has been suspended pending the resolution of legal questions regarding jurisdiction.

Following the acceptance of the Strategic Environmental Plan for the province in 1992, a total logging ban took effect in Palawan, and logging in San Vicente virtually stopped.

Agriculture

San Vicente's agricultural land covers 12,685 hectares, but only 27% is cultivated. Most of the farms are located in the barangays of New Agutaya, San Isidro, and Caruray. More riceland is being developed in Alimanguan, New Canipo, New Villafria, and Port Barton. The average farm size per household is 3 hectares. About 70% of the population is engaged in farming.

Major crops are rice, coconut, cashew, and corn. Rice covers 63% of cultivated land, but only 35% of the area planted to rice is irrigated. In 1996, after years of shortage of this staple, the town achieved self-sufficiency in rice.

The average annual yields of selected crops (in kilos per hectare) are:

Cutting of wood for local consumption has been suspended pending the resolution of legal questions regarding jurisdiction.

Rice - 1,050 Coffee - 625
Coconut - 621 Corn - 2,450
Cashew - 3,132 Legumes - 459

San Vicente has a Rural Agricultural Center built under the Second Palawan Integrated Area Development Project (SPIADP); the municipal agriculturist holds office in the Center with two other staff. The SPIADP, which ended in 1997, also operated a Carabao Breeding Center in the municipality. In addition, the town operates hillside farms, rice technology demonstration projects, and irrigation projects. A vaccination program has kept livestock relatively safe from infectious diseases. Moreover, unlike other municipalities, which have become infested with the mango pulp weevil, San Vicente has been declared free of the pest and has strictly enforced quarantine laws.

Cottage Industries

Mat weaving is a popular economic activity, especially for the womenfolk. Local residents also make ropes, furniture, charcoal, baskets, boats, metal craft, hammocks, and candy to augment their families' income. In the town center, there is enough business going for skilled tailors and seamstresses, and food preservation is gaining popularity. Still, fish and squid drying remains the primary source of income for most fishing communities.

Tourism

San Vicente has some noteworthy attractions — white sand beaches, coral reefs, and waterfalls, to name a few — but the tourism industry in the municipality remains largely undeveloped. In 1996, only 734 tourists visited the town, according to a municipal survey of lodging houses. Most of them stayed in Port Barton, where most tourist facilities are located. Port Barton is a popular destination for "backpackers" from Europe.

A potential tourist attraction, which the municipal government is eyeing for development, is Long Beach, a 14-kilometer stretch from New Agutaya to Alimanguan. Waterfalls are found in Pamoayan, Matalangao, and Little Baguio which are ideal for nature hikes and bird-watching treks. In addition, scuba divers have identified 17 dive sites in Boayan island, around Port Barton, and near the Capari Dive Camp in the Poblacion where coral reefs form colorful underwater gardens. Wreck diving in Albaguen island is another potential attraction.

BASIC SERVICES

Education

There are 23 elementary schools spread over the municipality and four secondary schools in Poblacion, Port Barton, Caruray, and Alimanguan. Municipal records showed that, in 1996, a total of 4,245 pupils were enrolled in elementary schools while 1,314 students attended high school.

The tourism industry in the municipality remains largely undeveloped.

In many coastal areas, primary school (Grade 1- 4) is the only educational service available. This is because there are not enough teachers, and these areas are not easily accessible. In the sitios of Daplac and Casoyan in Boayan island, which is part of Barangay Poblacion, many school-age children have yet to start formal education because the schools are too far from their homes. Since most parents cannot afford to send their children to high school, many people start having families at a young age, some as early as 14 years old.

Health

The Rural Health Unit in the Poblacion has a 3-bed facility that can handle minor surgery. Personnel include one municipal health officer/doctor, 4 nurses, 6 midwives, a rural sanitary inspector, a microscopist, and 2 dentists. There are also 3 barangay health stations with nurses and barangay nutrition scholars in Alimanguan, Port Barton, and Caruray. The staff of Alayka-San Vicente, a special project of the Provincial Health Office, has organized Barangay Health Committees and conducted training for health workers. The town has one ambulance.

The most common illnesses are malaria, respiratory diseases, and diarrhea. In 1996, the three leading causes of death were pneumonia, tuberculosis, and measles. There is no central waste disposal system, so most residents burn or bury their garbage. About 43% of the population have closed pit toilets (known as Antipolo type), 12% have open pit toilets, 22.45% have water-sealed toilets, and the rest have no toilets at all.

Many women have expressed interest in family planning, but pertinent health services and medical supplies are not always available.

Welfare

The local government has implemented a Self-Employment Assistance Program that

provides capital for livelihood projects; a total of 55 families used the program in 1996. There are also programs for women, persons with disabilities, and senior citizens. Day care centers have been established in all barangays for pre-school children, who are provided supplemental feeding in addition to educational services by teachers.

Security

The San Vicente police force is composed of 12 people, including the station commander. The municipality has a relatively low crime rate (only 10 cases were reported in 1996). The local police has organized Barangay Intelligence Networks for support in fighting crime and monitoring illegal possession of firearms.

Transportation

Because of the poor condition of the dirt roads linking the municipality to the rest of the province, very few buses and jeepneys ply the route on a daily basis. The service is not very reliable. Former logging roads provide a link between the barangays, but these are seldom used.

The municipality has a relatively low crime rate (only 10 cases were reported in 1996).

Northern barangays rely on sea transport as there are no roads. Three vessels (locally called *batil*) ply the Manila route; another goes to Iloilo. Two seaports in the Poblacion and Pagdanan are used as docking areas by most boats.

A private airstrip, with a length of 900 meters and a width of 100 meters, is found near the Poblacion. It is suitable for light aircraft only.

Water

Most households get their water from open shallow wells, hand pumps, and deep wells. The rest are dependent on rivers, springs, and rainwater. Level II and Level III waterworks projects in some barangays provide potable water supply to residents.

Electricity

Private generating sets and the Palawan Electric Cooperative (PALECO) power plant serve some 10% of all households. Electric power for the 195 registered members of PALECO is usually available from 6 to 10 in the evening only. The majority of residents (85%) use kerosene lamps.

In almost all the coastal communities we visited, we noted the presence of a "beta house" (a place where videos are shown). For a minimal fee of P5 or even a can of cashew nuts for those who have no money, residents can watch mostly action movies. Often, the owner of the "beta house" also owns the generator which supplies electricity to barangay residents for a monthly fee ranging from P50 to P70 for a 20-watt fluorescent lamp.

Communication

There is a post office located in the Poblacion but there are not enough letter carriers and transportation facilities serving the area, so service is very slow. A solar-powered telephone system provides direct dial service to residents. The provincial government-owned Palawan Radio Communications System and a municipal two-way radio system connect the town with other barangays and Puerto Princesa. Television is used mostly for videotaped movies as San Vicente is not yet served by any TV station. Most households own a radio, which receives clear broadcast signals from Puerto Princesa and some Manila radio stations.

A solar-powered telephone system provides direct dial service to residents.

FINANCE

The municipality's sources of income include the annual internal revenue allotment (IRA) from the national government, licenses and business taxes, operating and miscellaneous fees, and grants from various agencies. The total income of the municipality for 1996 was P20,721,742. Personnel services, operating expenses, and special projects of the municipality take up most of the expenditures and amounted to P20,711,504 in 1996.

Chapter 4
VILLAGE LIFE AT A GLANCE
(Barangay History and Profiles[1])

Village history, socio-economic and biogeographical data can be invaluable to planners and researchers. The information presented here is organized into 10 sections, each section corresponding to one barangay. The barangays are listed from the northernmost to the southernmost barangay as follows:

Binga
New Canipo
Sto. Nino
Alimanguan
San Isidro
New Agutaya
Poblacion
New Villafria
Port Barton
Caruray

Village history, socio economic and biogeographical data can be invaluable to planners and researchers.

(Note: Resource maps are shown on pages 37 to 54)

[1] Most of the data found in this section came from the socio-economic profile and barangay profiles prepared by the Technical Assistance Office of San Vicente Mayor Antonio C. Alvarez, 1993 (updated in 1995).

BINGA

After a powerful storm hit this coastal village several decades ago, residents scouring the beach found thousands of shells known as "*binga*" in the Calamianes Islands in northern Palawan. Because of this, the indigenous Tagbanua people who first inhabited this place decided to name their community "Binga", after the shell. In 1920, Binga became a barrio of Taytay municipality. It was among the barangays that formed San Vicente when the latter became a municipality in 1972.

Binga, in the northernmost part of San Vicente, was named after a shell.

Binga is located in the northernmost part of San Vicente. Six kilometers of barangay roads constructed by a former logging company traverse the settlement but most roads are in poor condition so boats are the main mode of transportation. It takes about 2 hours by boat to reach the Poblacion. Because of this, residents find it easier and more practical to trade with the nearby barangays of Taytay, such as Liminangcong and San Jose, than with the Poblacion.

Fishing and farming are the principal sources of livelihood. Other means of employment are retail services and wage labor. Major crops produced are rice, coconut, cashew, and banana. Out of 120 boats used by fishermen, 94 are motorized, indicating a certain level of affluence.

SITIOS (11):	Boding, Binga Proper, Gue, Malarim, Lincuan, Lumambong, Mamagang, Cauban, Newtio, Ipidal, Imuruan
POPULATION:	1,363 individuals in 336 households (1995 census)
LAND AREA:	1,387 hectares
LANGUAGES SPOKEN:	Tagalog, Cebuano, Cuyunon, Ilonggo, Tagbanua, Agutaynon
MAJOR RELIGIONS:	Roman Catholic, Protestant, Iglesia ni Cristo, Tagbanua
MOST COMMON ILLNESSES:	Malaria, pulmonary diseases, diarrhea
SCHOOLS:	1 elementary school in Binga proper, 1 primary school in sitio Cauban
ORGANIZATIONS:	Masigasig na Katutubong Samahan ng Binga, Boding Resource Management Center, Boding Women's Organization
HEALTH SERVICES:	1 barangay health center with nurse and health worker
WATER SOURCE:	Level II communal faucet, dug wells, Jetmatic pumps, creeks
ELECTRICITY:	In Binga proper, 20 households are serviced by a barangay-owned generating set, and some sitios are powered by privately-owned generating sets. All told, only 10% of barangay residents have electricity, and 90% use kerosene lamps for light.
COMMUNICATION:	More than 70% of households have portable radios. The barangay captain has one hand-held radio connected to the municipal frequency for monitoring purposes.

Resource map on page 38

NEW CANIPO

Settlers from Cuyo town in northeastern Palawan arrived in this village several decades ago aboard indigenous sailboats locally known as *"pangko"*. They gave the barangay its name, which was derived from their place of origin in Cuyo. New Canipo became a barangay in 1972.

There are no roads connecting New Canipo to other settlements – this barangay has been isolated for nearly five decades now. Sea transport links the barangay to Alimanguan, some 40 minutes away, its nearest access to the provincial road network.

Settlers from northeastern Palawan arrived in New Canipo aboard indigenous sailboats known as "pangko".

The local economy depends on farming and fishing. Coconut, cashew, root crops, and vegetables are the main cash crops. Rice is planted for domestic use. Most families raise livestock for food and additional income. Farming and carpentry provide another source of income for families with skilled members. Residents also provide manual services for free through a system of cooperation called *"pahina"* (also known as *"bayanihan"* in other places).

Because of strong winds spawned by the southwest monsoon, fishing is limited to the squid and cuttlefish season from December to May, when the weather is relatively calm. Most fishermen use non-motorized paddle bancas.

Nearly 70% of the barangay is covered with forests filled with indigenous trees and teeming with wildlife. Except for some residents who occasionally engage in illegal cutting of timber, there are no reports of forest-related economic activities.

SITIOS (4):	Palee/Purok Magsasaka, Capalpalan/Purok Pagkakaisa, Ted Purok Pag-asa, Ombo/Purok Mangingisda
LAND AREA:	2,753 hectares
POPULATION:	996 individuals in 166 households (1995)
LANGUAGES SPOKEN:	Cuyunon, Tagalog
MAJOR RELIGIONS:	Roman Catholic, Seventh Day Adventist
MOST COMMON ILLNESSES:	Malaria, measles, diarrhea
SCHOOLS:	1 barangay elementary school (Grades 1 - 6)
ORGANIZATIONS:	4 sitio associations, New Canipo Farmers' and Fishermen's Association, Barangay Health Committee
HEALTH SERVICES:	1 Barangay Health Center with a nurse and barangay health worker
ELECTRICITY:	A solar-powered battery charging system serves 15 households, and one generating set serves 18 households. The majority of residents (up to 81%) use kerosene lamps

Resource map on page 40

STO. NIÑO

Some people still call this barangay by its old name *"Irawan"*, which means a long dry season. Formerly a sitio of neighboring Alimanguan, barangay Sto. Niño gained its present status in 1989 after nine years of lobbying with municipal and provincial officials. It is named after its patron saint, the child Jesus.

Some people still call Barangay Sto. Niño by its old name "Irawan" which means a long dry season.

Migrants from Samar form the largest ethnic group, followed by those from Masbate and Mindanao. Fishing is the main source of livelihood, but most residents turn to farming during the monsoon season in the second half of the year. Compressor-aided fishing was practiced in the barangay until the municipality outlawed the method in 1995. Rice is grown mostly for local use. Some people practice slash-and-burn farming in the forests, which also provide the main source of firewood and building materials.

Its steep beach makes Sto. Niño inaccessible during bad weather. A 3-km dirt road connects the barangay to Alimanguan, its main trading partner.

SITIOS (3):	Maymanok, sitio Proper, Ombo
LAND AREA:	2,997.442 hectares
POPULATION:	1,033 individuals in 181 households (1995 census)
LANGUAGES SPOKEN:	Visayan, Tagalog, Ilonggo, Cuyunon, Masbateño
RELIGIONS:	Roman Catholic, Iglesia ni Kristo, Pentecostal, Endtime Message
MOST COMMON ILLNESSES:	Malaria, pulmonary diseases, measles
SCHOOLS:	1 barangay elementary school (Grades 1 - 6)
ORGANIZATIONS:	7 purok associations, Sto. Niño Mothers' Club, Barangay Water & Sanitation Association, Sto. Niño Compressor Fishermen's Association, Samahan ng Magbubukid at Mandaragat ng Sto. Niño
HEALTH SERVICES:	1 day-care worker
WATER SOURCES:	13 handpumps, 3 Jetmatic pumps, 4 natural springs

Resource map on page 37

ALIMANGUAN

The Tagbanua settlers who first inhabited this place named it after the local term for crab (*"alimango"*) because of the abundance of the crustacean in the mangroves. Formerly a sitio of Taytay, it became a barangay after World War II. Alimanguan was one of the barangays ceded to San Vicente when the latter became a municipality in 1972.

Fishing and farming are the main sources of livelihood. Rice is planted both in paddies and the uplands. Other sources of income are small-scale trading of marine

and agricultural products, wage labor, and *sari-sari* stores. Many families also raise poultry and livestock.

Since the provincial road passes through the barangay, Alimanguan is easily accessible both by land and sea.

SITIOS:	Purok 1 to 6 (Tagpis, Ipanganan, Canadgan, Boong, Tagpao, Baracion) further subdivided into 12 sitios
LAND AREA:	2,997.214 hectares
POPULATION:	2,529 individuals in 468 households (1995 census)
LANGUAGES SPOKEN:	Tagalog, Cebuano/Waray, Cuyonon
MAJOR RELIGIONS:	Roman Catholic, Baptist, Iglesia ni Kristo, Seventh Day Adventist
SCHOOLS:	1 barangay elementary school and 1 high school
HEALTH SERVICES:	1 barangay health center complemented by a medical outreach team with 1 doctor, 1 nurse, 2 midwives, and 1 attendant
ELECTRICITY:	barangay power generating set and privately owned generators

Resource map on page 42

Alimanguan is named after "alimango" (crab) because of the abundance of the crustacean in the mangroves.

SAN ISIDRO

Before it became a barangay, San Isidro was called *"Emeg",* which means moist. Migrants from Agutaya in northeastern Palawan were among the earliest pioneers here. A former sitio of New Agutaya, its southern neighbor, San Isidro became a barangay in 1989. It is named after its patron saint.

Located some 3 km north of the San Vicente town proper, San Isidro is easily accessible by land. Its shoreline is part of the municipality's famed Long Beach, a potential tourist attraction, but the barangay needs assistance in developing the area.

Farming is the main source of income; coconut, rice, and cashew are the principal cash crops. Post-harvest facilities are available including 8 corn and rice mills and 1 warehouse. Two tractors are also used in the area. Most of the fishermen are found in sitio Bokbok, a sparsely populated coastal settlement beside Long Beach.

SITIOS (5):	Bokbok, sitio Proper, LTC (Lanas, Tago-tago, and Capitol), Emeg, sitio Salvador (contested by Roxas)
LAND AREA:	4,216.94 hectares
POPULATION:	796 individuals in 161 households (1995 census); excludes Salvador
LANGUAGES SPOKEN:	Agutaynon, Cuyunon, Ilocano, Visayan
RELIGION:	Roman Catholic

MOST COMMON ILLNESSES:	upper respiratory tract infection (URTI), malaria, diarrhea
SCHOOLS:	1 barangay elementary school, 1 high school, 1 college
ORGANIZATIONS:	7 purok associations, Purok Waterworks & Sanitation Association, San Isidro Multipurpose Cooperative, Bokbok Fishermen's Association, Kalipi (a women's club)
ELECTRICITY:	An unspecified number of households are served by 2 power generating sets; the rest use kerosene lamps.
WATER SUPPLY:	26 Jetmatic pumps, 6 open dug wells, 1 deep well

Resource map on page 52

NEW AGUTAYA

Most of the early settlers of this barangay came from the island municipality of Agutaya in northeastern Palawan, hence the name "New Agutaya". The barangay used to be part of Taytay, but it was turned over to San Vicente in 1972. New Agutaya is easily accessible by land as it is located right next to the Poblacion, and the provincial road passes through the barangay.

Almost all residents are engaged in farming, with most farmers (90%) owning their land. Rice and coconut are the major crops; livestock production provides additional income to many residents. Most fishermen have settled along a sandy strip called Bukana, which lies between a river lined with mangroves and the picturesque expanse of Long Beach.

New Agutaya got its name from the island municipality of Agutaya in northeastern Palawan, where most of the early settlers came from.

SITIOS (13):	Bagong Silang, Matagumpay, Makabayan, Damayan, Kasipagan, Magsasaka, Katarungan, Bukana, Inarayan, Lanas, Little Baguio, Capitol, Itabiyak
LAND AREA:	4,216.94 hectares
POPULATION:	1,713 individuals in 330 households (1995 census)
LANGUAGES SPOKEN:	Agutaynon, Tagalog, Ilonggo, Cuyunon, Visayan
MAJOR RELIGIONS:	Roman Catholic, Iglesia ni Kristo, Seventh Day Adventist
MOST COMMON ILLNESSES:	URTI, malaria, diarrhea
SCHOOLS:	1 barangay elementary school
ORGANIZATIONS:	Bucana Fishermen's Association, Maringit-ringit Communal Irrigators' Association, Landing Farmers Association, Inarayan Women's Association
ELECTRICITY:	Only 20 households benefit from the power plant of the Palawan Electric Cooperative, which is located in the barangay; the rest use kerosene lamps.
WATER SUPPLY:	200 privately owned pumps, 3 communal pumps, dug wells, springs. An irrigation dam serves 325 households and covers 650 hectares.

Resource map on page 53

POBLACION

When the former barrio of San Vicente became a municipality in 1972, this area became Barangay Poblacion, the seat of the municipal government. The barangay can be reached by land, air, and sea transport. Buses from the capital

city of Puerto Princesa and neighboring Roxas town ply this route daily. A small gravel airstrip can accommodate light planes. At the pier, motorized bancas accept passengers going to outlying islands and barangays.

As the main trading center, the barangay has a public market where goods are bought and sold. Tourism has yet to be fully developed, although the Capari Dive Camp resort has operated here for many years. Fishers outnumber farmers four to one, mainly because of Boayan Island where residents depend on the sea for their livelihood. Other barangay residents are gainfully employed in the municipal government and a few establishments in town, while some run their own businesses.

As the main trading center, Barangay Poblacion has a public market where goods are bought and sold.

SITIOS (12):	Casoyan, Pulang Bato, Daplac, Village, Panindigan, Pinagmalucan, Poblacion Proper, Macatumbalen, Maringit-ringit, Bakawan, Quintangan, Maningning
LAND AREA:	4,066.76 hectares
POPULATION:	4,914 individuals in 819 households (1995 census)
LANGUAGES SPOKEN:	Cebuano, Agutaynon, Cuyunon, Bicolano, Tagalog
MAJOR RELIGIONS:	Roman Catholic, Iglesia ni Kristo, Methodist, Baptist, Pentecostal
MOST COMMON ILLNESSES:	Pulmonary diseases, malaria, diarrhea
SCHOOLS:	4 elementary schools and 1 national high school
ORGANIZATIONS:	San Vicente Multi-purpose Cooperative, Pastoral Council of Barangay Poblacion, Mothers' Club, Farmers' Association, Pinagmalucan Fishermen's Association, Macatumbalen Fishermen's Association, Panindigan Women's Association
HEALTH SERVICES:	1 mini-hospital with 1 municipal health officer and 9 personnel
ELECTRICITY:	Most residents of Panindigan and the barangay proper rely on the Palawan Electric Cooperative, which supplies power from 6 p.m. to 12 midnight every day (the hours are extended during special occasions, such as fiestas or basketball tournaments); the rest use kerosene lamps.
WATER SUPPLY:	Level III water system, open dug wells, rain catchment, hand pumps
COMMUNICATION:	Post office and municipal telecommunication service. Telephone service is also available but is dependent on current capacity of a solar power generator.

Resource map on page 44

NEW VILLAFRIA

One of the oldest barangays formerly belonging to Puerto Princesa, this village is still more commonly known as *"Kemdeng"* (meaning not known), the name given to it by its original Tagbanua inhabitants. The influx of migrants from Cuyo and Agutaya gradually drove the indigenous people to the mountains in an area known as Upper Kemdeng, where many of them remain to this day. In 1969, the barangay captain requested the transfer of New Villafria to the municipality of San Vicente. The barangay was named after the hometown of one of the earliest settlers in Agutaya.

New Villafria has the smallest population among all barangays. It is accessible by land transportation from Poblacion and by boat from the rest of the municipality.

Farming is the main source of income among residents. Rice, coconuts, and cashew are the principal cash crops. Most residents also raise livestock for food and trade. In recent years, agricultural production has declined due to several factors including lack of irrigation and marketing assistance. Residents go fishing only for food and not as a commercial activity. Women make nipa and coconut shingles to augment the family income. Another source of income for the municipality is the Palawan Silica Industries, which mines silica and ships it to Manila for the manufacture of beer bottles. Tourism is not developed in the area although given the barangay's white sand beaches, it has potential. A German investor tried to build a resort here but the venture failed because of financing problems.

SITIOS (8):	Upper Kemdeng, Lower Kemdeng, Main Site, Linabongan, Sagbayen, Tandan, Malikikien, Aroyog further divided into 7 puroks (Bagong Silang, You and Me, Viscua, Magkakaisa, Maningning, Maunlad, Mahayahay)
LAND AREA:	4,928 hectares
POPULATION:	621 in 120 households (1995 census)
LANGUAGES SPOKEN:	Agutaynon, Cuyunon, Visayan, Tagbanua
MAJOR RELIGIONS:	Roman Catholic, Baptist, Seventh Day Adventist
SCHOOLS:	1 pre-school and 1 barangay elementary school
ORGANIZATIONS:	Barangay Development Council, 5 purok organizations and 1 association each for indigenous communities, youth, church, and farmers
HEALTH SERVICES:	1 Barangay Health Center with no regular staff, 1 nutrition scholar
ELECTRICITY:	27 households are served by 1 barangay-owned power generating set, the rest use kerosene lamps.
WATER SUPPLY:	8 dug wells, 3 Jetmatic pumps
COMMUNICATION:	More than 70% of the households have portable radios. One hand-held radio was issued to the barangay captain to serve as a communication link with the municipal government.

Resource map on page 54

PORT BARTON

One of the most popular tourist destinations in Palawan, the village of Port Barton traces its roots to Tagbanua settlements established before the turn of the century. Historical records show that in 1890, the place was called *"Itaytay"* (meaning unknown) by the 10 tribal families living there. In 1933, loggers arrived and set up camp in town. Afraid of the newcomers, the Tagbanuas fled to the mountains of Bunuangin. Later, a

blood pact was forged between the new settlers and the indigenous people to improve relations among residents in the area. Sometime in the 1940s, an Englishman named Col. Burton surveyed the islands. The place was named after him, although the spelling was slightly changed, probably resulting from local pronunciation. In 1961, Port Barton became a barangay of Puerto Princesa. It was one of the barangays transferred to San Vicente when the latter became a municipality in 1972.

Port Barton was named after an Englishman called Col. Burton, who surveyed the islands in the 1940s.

An array of tourist resorts lines the white sand beach on the main cove of the barangay proper, its postcard-pretty scenery luring visitors from all over the world. Aside from the coral reefs and unpolluted beaches in the outlying islands, two waterfalls and a verdant forest also attract jungle trekking enthusiasts. Although logging has diminished much of its forest reserves, Port Barton remains heavily wooded. It is interesting to note that tourism and commercial logging co-existed in the barangay for many years, making it a rival of San Vicente Poblacion as a hub of commercial activity in the municipality. Scuba diving is popular among tourists. The results of a survey of 32 visitors in Port Barton in 1998 are summarized in Box 4.1. It is noted that the visitors see problems in Port Barton but still want to return.

Port Barton has 13 islands: Albaguen, Cagnipa, Exotic, Capsalay, Inaladuan, Malindog, Bongot, Koyayo, Moraday, Paradise, Cagnipa, Endeavor and Ranged.

Passenger jeeps travel from Port Barton to Roxas or Puerto Princesa daily during summer, but the road is often impassable when the rains come in the second half of the year. Logging roads traverse the mountain region of the barangay although many have fallen into disrepair since the concession was closed in 1993. Fishing and tourist boats serve as alternative means of transportation when the road is closed, but are used mostly for island hopping.

Fishing is the main source of income for 65% of the local population. Almost 400 bancas are found in the area, more than half of them motorized. There are six fish landing areas with buying stations. Most of the fish catch is delivered to Puerto Princesa.

Sitios Darapiton and Tugdunen, Dapi, Coroan (TDC) are the main farming areas where rice, coconut, cashew, and other crops are grown. Poultry production and livestock

raising augment the income of most families. Mat weaving is a popular cottage industry among women.

SITIOS (15):	Albaguen, Capsalay, Pamoayan, Baybay Daraga, Bunuangin, Darapiton, Naonao, Cata, Villapeña (Queen's Bay), Matalangao, TDC, Pagdanan, Pag-asa, Pagkakaisa, Barongbong, Bigaho, Capisan, Cagnipa, Cata, Puyong
LAND AREA:	22,779.47 hectares
POPULATION:	4,362 individuals in 981 households
LANGUAGES SPOKEN:	Waray, Cuyunon, Cebuano, Tagalog, Ilonggo, Ilokano, Agutaynon
MAJOR RELIGIONS:	Roman Catholic, Pentecostal, Iglesia ni Cristo
MOST COMMON ILLNESSES:	Malaria, URTI, diarrhea, pneumonia
SCHOOLS:	3 elementary schools, 1 high school
ORGANIZATIONS:	16 purok and sitio associations, Kapisanan ng Maliliit na Mangingisda sa Purok Pagkakaisa, Samahan ng Maliliit na Mangingisda sa Sitio Pag-asa, Pamuayan Fishermen's Association, Nagkahiusang mga Gagmayng Mananagat sa Capsalay, Albaguen Small Fishermen's Association, Samahan ng mga Maliliit na Mangingisda sa Baybay Daraga, Nagpakabana nga mga Gagmayng Mananagat sa Barongbong, Kapisanan ng mga Mandaragat sa Bunuangin, Pagdanan Fishermen's Association, Kapunungan sa Lig-ong Kaliwat nga Nagdumala sa Kinaiyahan
HEALTH SERVICES:	4 Health Centers with 1 nurse and 2 midwives
ELECTRICITY:	Privately-owned generators serve 60% of all households, most tourist resorts have their own generating sets, while 25% of the population use kerosene lamps.
WATER SUPPLY:	Open dug wells, deep wells, hand pumps, rivers and springs, Level III
COMMUNICATION:	The barangay has radio contact with the municipal government. El Busero beach resort has VHF facilities connected to the barangay, municipal government, and Puerto Princesa City. Swissipini Resort maintains radio contact with its Puerto Princesa office.

Resource map on page 46

CARURAY

The southernmost barangay of the municipality, Caruray got its name from the Tagbanua word *"maruway"*, which means easy life. Both indigenous people and migrants reaped bountiful harvest from the land and the seas surrounding the expansive area. The largest barangay of San Vicente, Caruray used to be part of neighboring Puerto Princesa before it was ceded to the former in 1972. Its location makes Caruray more accessible to the city than to Poblacion. There are no roads connecting Caruray to San Vicente yet, but one is under construction. Rice and corn are the principal crops sold commercially. The absence of farm-to-market roads poses a marketing problem to farmers.

Farming and fishing are the main sources of livelihood. Residents of sitios Sta. Cruz and Dinay work in the silica mine of the Palawan Silica Industries, while small-scale gold panners try their luck in the river of sitio Little Caramay. Tagbanua forest dwellers gather rattan, almaciga resin, and wild honey. Wage labor for jobs, such as

Box 4.1. Results of visitor survey in Port Barton.

In early 1998, the CRMP supported a survey of tourists in Port Barton to provide information for improving Port Barton as a tourist destination. The results follow.

The average age of respondents was 34 years; the oldest was 73 and the youngest 19. 56% were female. Twenty-three came from outside the Philippines. Of these, 21 originated in Europe and four were living outside their country of origin. Most traveled in a group of two. The largest reported group was 12, the smallest was 1 and the average was 2.9.

Among the foreigners, the average stay in the Philippines was 3.5 weeks, and on Palawan Island, 12 days. Overall, the average stay in Port Barton was 4 days. 62% of the respondents said they learned about Port Barton from a guidebook, 31% through a friend and 7% through a local resident. All respondents said it was their first visit to Port Barton.

Sabang and Puerto Princesa City served as the gateway to Port Barton for most of the visitors; 7% said they came from Roxas. About 70% came by boat, which cost an average of P600 per person (one-way). Asked where they would be going after Port Barton, 12 answered Puerto Princesa City, 8 El Nido, 6 Sabang, and 4 Roxas; 43% expected to leave by boat.

The primary activities the visitors listed in the order of frequency were relaxation, snorkeling, island hopping, sightseeing, scuba diving, hiking and swimming. The most common activities that visitors reported they were already participating in were snorkeling, island hopping, relaxation and swimming.

El Busero appeared to be the most popular resort, with 40% of the respondents registered there; it was followed closely by Swissipini (34%), then by Summer Homes (12%), Ausan (7%) and Scandinavian (7%). On a scale of 1 to 5, lodgings were rated an average of 3.2. Choice of accommodation was based mainly on guidebook and friends' recommendations, though some respondents said they picked their resorts by "looking" and others through a local person's advice; 50% said price was a primary factor in their choice of resort. The average lodging cost was Php260 per person per night. Visitors spent an average of Php670 per person per day.

70% of the respondents were scuba divers and snorkelers, and all said they were willing to contribute an average of Php120 per person as usage fee to a marine sanctuary. Asked about contributing to an environmental fund, 78% indicated 'Yes'; the average contribution would be Php150 per person. 60% said they felt there was a need for an information center in Port Barton.

Half of those interviewed felt there were environmental problems in Port Barton. The No.1 complaint was litter on the beach both in town and on the islands. Other environmental concerns were deforestation, coral damage, forest fires, and noise. Asked, "What did you find most enjoyable in Port Barton?" the interviewees answered: snorkeling, the local people, sightseeing, island hopping, the beach, relaxed atmosphere, and swimming.

The visitors were also asked, "Will you return to Port Barton?" 64% said they would, 11% would not, and 25% said "Maybe."

The survey also asked for comments or suggestions to improve the Port Barton experience. The most common answers were related to maintaining the cleanliness of the area, followed by "Don't change anything, Port Barton is beautiful." Other suggestions had to do with improving transportation, the roads and accommodations.

There was strong awareness of the need to have mooring buoys at frequented reefs and for boatmen to avoid anchor damage on the reefs. An emphasis on education regarding coral ecosystems and putting up informational signs about corals at strategic locations was noted. Indicating concern to preserve the natural surroundings of the area, many respondents remarked that Port Barton would lose its character if it would be allowed to "grow too large," meaning allowing tricycles in town or large-scale development, such as hotel-style resorts.

Source: Jordan, R. 1998

carpentry and hauling of crops, augments the income of families in some villages. Charcoal processing and nipa shingle-making are also popular home industries.

Most farmers cultivate their own land, usually acquired through occupancy and inheritance. Buying of "rights" from previous claimants, often Tagbanuas, is another way of getting land. To protect the interest of indigenous people, the SEP-SVP and the Office of Southern Cultural Communities are assisting the Tagbanua in getting a Certificate of Ancestral Domain Claim from the DENR.

SITIOS (10):	Old Site, New Site, Matamis, Little Caramay, Canlaon, Decala, Dinay, Gawid, Catalat, Sta. Cruz
LAND AREA:	33,078 hectares
POPULATION:	2,689 individuals in 543 households (1995 census)
LANGUAGES SPOKEN:	Cebuano, Tagalog, Tagbanua, Ilonggo, Cuyunon
MAJOR RELIGIONS:	Roman Catholic, Seventh Day Adventist, Baptist, Methodist, Iglesia ni Kristo
MOST COMMON ILLNESSES:	Malaria, diarrhea, pneumonia
SCHOOLS:	6 elementary schools, 1 national high school
ORGANIZATIONS:	2 multipurpose cooperatives, 1 irrigators' assocation, 9 farmers' and fishermen's associations, Barangay Health Committee
HEALTH SERVICES:	1 Health Center with midwife and an assistant barangay nutrition scholar, medical outreach team with 1 doctor and 2 nurses
ELECTRICITY:	The barangay's solar-powered facility serves 3% of households in sitio Old Site while a solar home system is used in one household in Gawid. Privately owned generating sets serve 12% of households; most residents (85%) use kerosene lamps.
WATER SUPPLY:	Hand pumps, Jetmatic pumps, 1 springbox and reservoir, 2 irrigation dams

Resource map on page 48

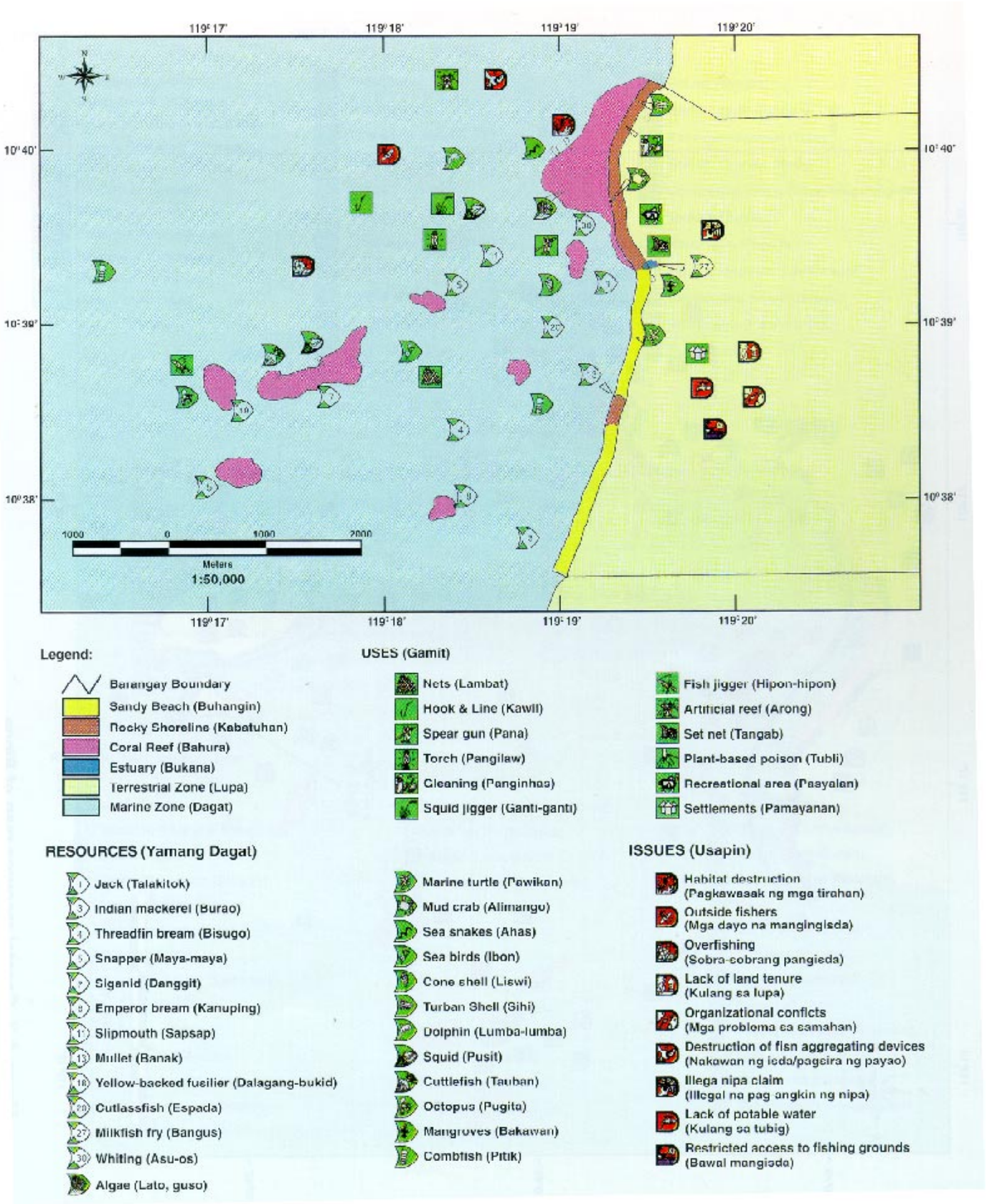


Figure 4.1. Coastal resource map of Sto. Niño.

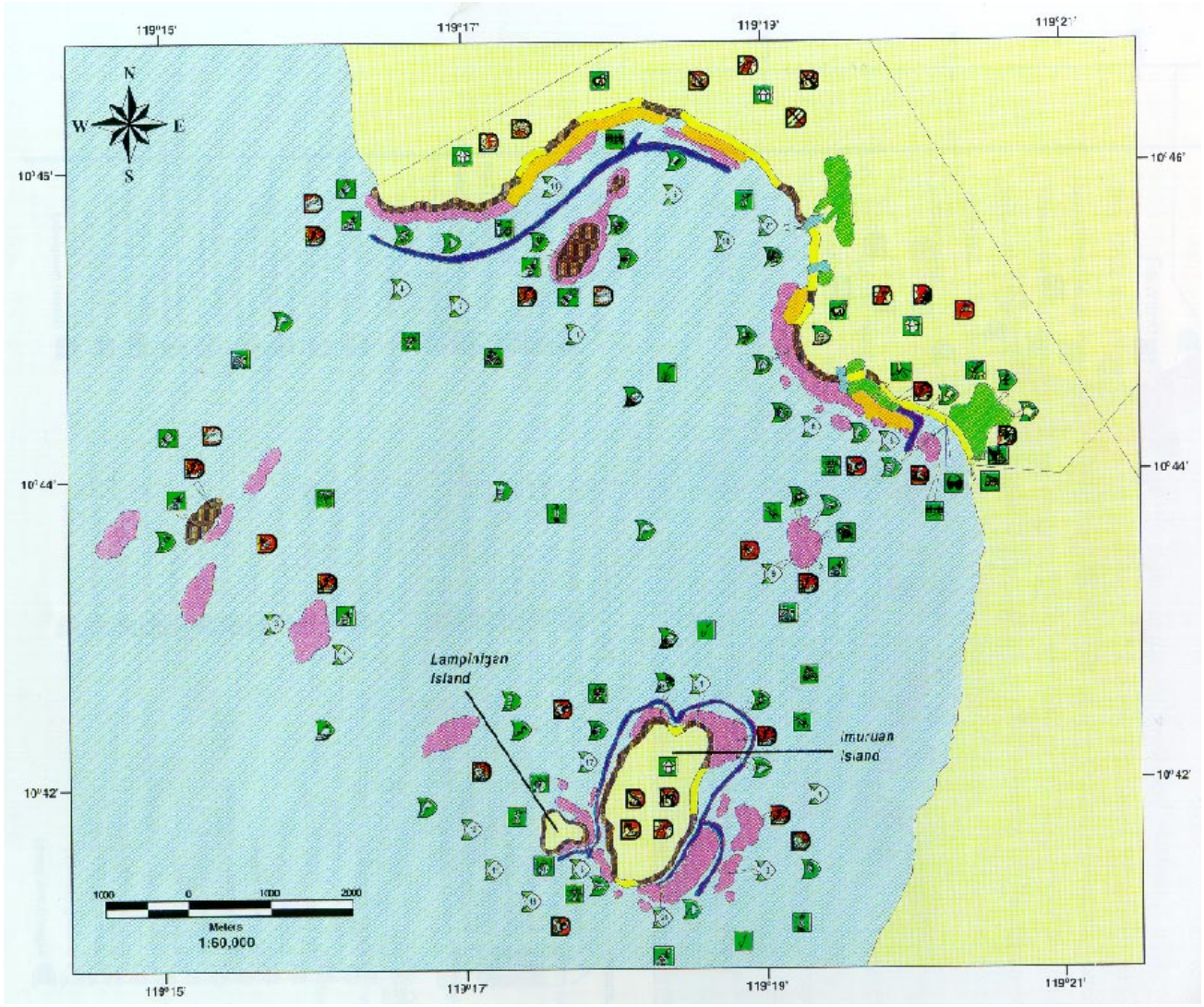


Figure 4.2. Coastal resource map of Binga.


Legend:
Barangay boundary
Sandy Beach (Buhangin)
Rocky Shoreline (Kabatuhan)
Inshore Reef Flats (Hibasan)
Seagrass Beds (Lusayan)
Coral Reef (Bahura)
Estuary (Bukana)
Channels/Passes (Kanal)
Mangroves (Bakawan)
Terrestrial Zone (Lupa)
Marine Zone Dagat)
USES (Gamit)
Traps (Bubo)
Nets (Lambat)
Hook & line (Kawil)
Spear gun (Pana)
Fish corral (Baklad)
Gleaning (Panginhos)
Squid jigger (Ganti-ganti)
Fish jigger (Hipon-hipon)
Artificial reef (Arong)
Floating fish aggregating devices (Payaw)
Fry bulldozer (Sudsod)
Set net (Tangab)
Explosives (Bungbong)
Plant based poison (Tubli)
Sodium Cyanide (Sosa)
Commercial fishing (Dinagkong Pangisda)
Tourism (Turismo)
Mariculture (Pearl farm)
Marine Sanctuary (Santuwaryo)
Recreational area (Pasyalan)
Settlements (Pamayanan)
Torch (Pangilaw)
ISSUES (Usapin)
Habitat destruction (Pagkawasak ng mga tirahan)
Outside fishers (Mga dayo na mangingisda)
Overfishing (Sobra-sobrang pangisda)
Siltation (Banlik o putik)
Destructive fishing (Mapanirang pangisda)
Lack of land tenure (Walang lupa)
No alternative livelihood (Walang ibang kabuhayan)
Organizational conflicts (Mga problema sa samahan)
Lack of fishing implements (Kulang sa ggamit pangisda)
Destruction of fish aggregating devices (Nakawan ng isda/pagsira ng payao)
No schools (Walang paaralan)
Inadequate health care (Kulang sa gamot)
Illegal nipa claim (Illegal na pag-angkin ng nipa)
Lack of potable water (Kulang sa tubig)
No fish traders (Walang namimili)
No roads (Walang kalsada)
RESOURCES (Yamang Dagat)
1 Jack (Talakitok)
2 Spanish mackerel (Tanguige)
3 Indian mackerel (Burao)
4 Threadfin bream (Bisugo)
5 Snapper (Maya-maya)
6 Grouper (Lapu-lapu)
7 Siganid (Danggit)
8 Emperor bream (Kanuping)
9 Fusilier (Sulid)
10 Anchovy (Dilis)
11 Slipmouth (Sapsap)
12 Shadow kingfish (Kalapato)
13 Round scad (Galunggong)
14 Parrotfish (Mulmol)
24 Big-eyed scad (Matangbaka)
27 Milkfish fry (Bangus)
Algae (Lato, guso)
Marine turtle (Pawikan)
Sea snakes (Ahas)
Sea birds (Ibon)
Ray (Pagi)
Cone shell (Liswi)
Giant clam (Taklobo)
Cowrie (Lumban)
Fan shell (Tarab)
Turban shell (Sihi)
Spider shell (Saang)
Abalone (Lapas)
Clam (Punaw)
Dolphin (Lumba-lumba)
Whale (Ambuhutan)
Sea cucumber (Balatan)
Squid (Pusit)
Cuttlefish (Tauban)
Octopus (Pugita)
Lobster (Banagan)
Combfish (Pitik)
Soft-shelled crab (Alimasag)
Mud crab (Alimango)
Mangroves (Bakawan)
Sand/rock (Buhangin/bato)

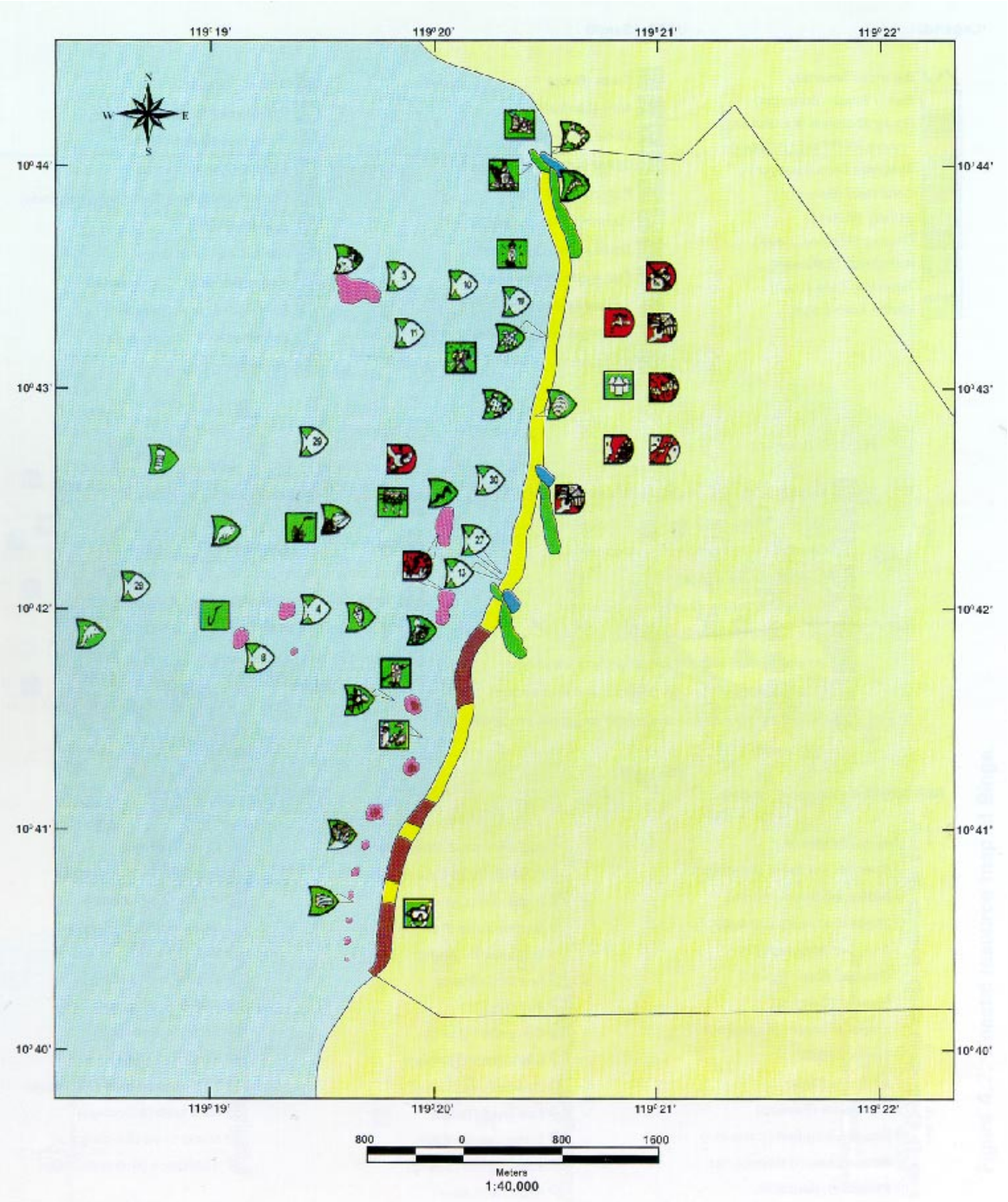


Figure 4.3. Coastal resource map of New Canipo.

Legend:

- Barangay boundary
- Sandy Beach (Buhangin)
- Rocky Shoreline (Kabatuhan)
- Coral Reef (Bahura)
- Estuary (Bukana)
- Mangroves (Bakawan)
- Terrestrial Zone (Lupa)
- Marine Zone Dagat)

USES (Gamit)

- Nets (Lambat)
- Hook & line (Kawil)
- Spear gun (Pana)
- Torch (Pangilaw)
- Gleaning (Panginhas)
- Squid jigger (Ganti-ganti)
- Artifcial reef (Arong)
- Floating fish aggregating devices (Payaw)
- Fry bulldozer (Sudsod)
- Set net (Tangab)
- Recreational area (Pasyalan)
- Settlements (Pamayanan)

ISSUES (Usapin)

- Damaged bridges (Sirang tulay)
- Destruction of fish aggregating devices (Nakawan ng isda/pagsira ng payaw)
- Habitat destruction (Pagkawasak ng mga tirahan)
- Illegal nipa claim (Illegal na pag-angkin ng nipa)
- Inadequate health care (Kulang sa gamot)
- Lack of fishing implement (kulang sa gamit pangisda)
- Lack of potable water (Kulang sa tubig)
- Organizational Conflicts (Mga problema sa samahan)

RESOURCES (Yamang Dagat)

- Indian Mackerel (Burao)
- Threadfin bream (Bisugo)
- Emperor Bream (Kanuping)
- Anchovy (Dilis)
- Slipmouth (Sapsap)
- Mullet (Banak)
- Needlefish (Balo)
- Milkfish fry (Bangus)
- Sardines (Tamban)
- Gold-streaked scad (Salayginto)
- Whiting (Asu-os)
- Algae (Lato,guso)
- Sea Cow (Dugong)
- Dolphin (Lumba-lumba)
- Marine Turtle (Pawikan)
- Soft-shelled crab (Alimasag)
- Mud crab (Alimango)
- Sea snakes (Ahas)
- Squid (Pusit)
- Cuttlefish (Tauban)
- Octopus (Pugita)
- Lobster (Banagan)
- Combfish (Pitik)
- Shrimps (Hipon)
- Cone shell (Liswi)
- Turban shell (Sihi)
- Clam (Punaw)
- Sea birds (Ibon)

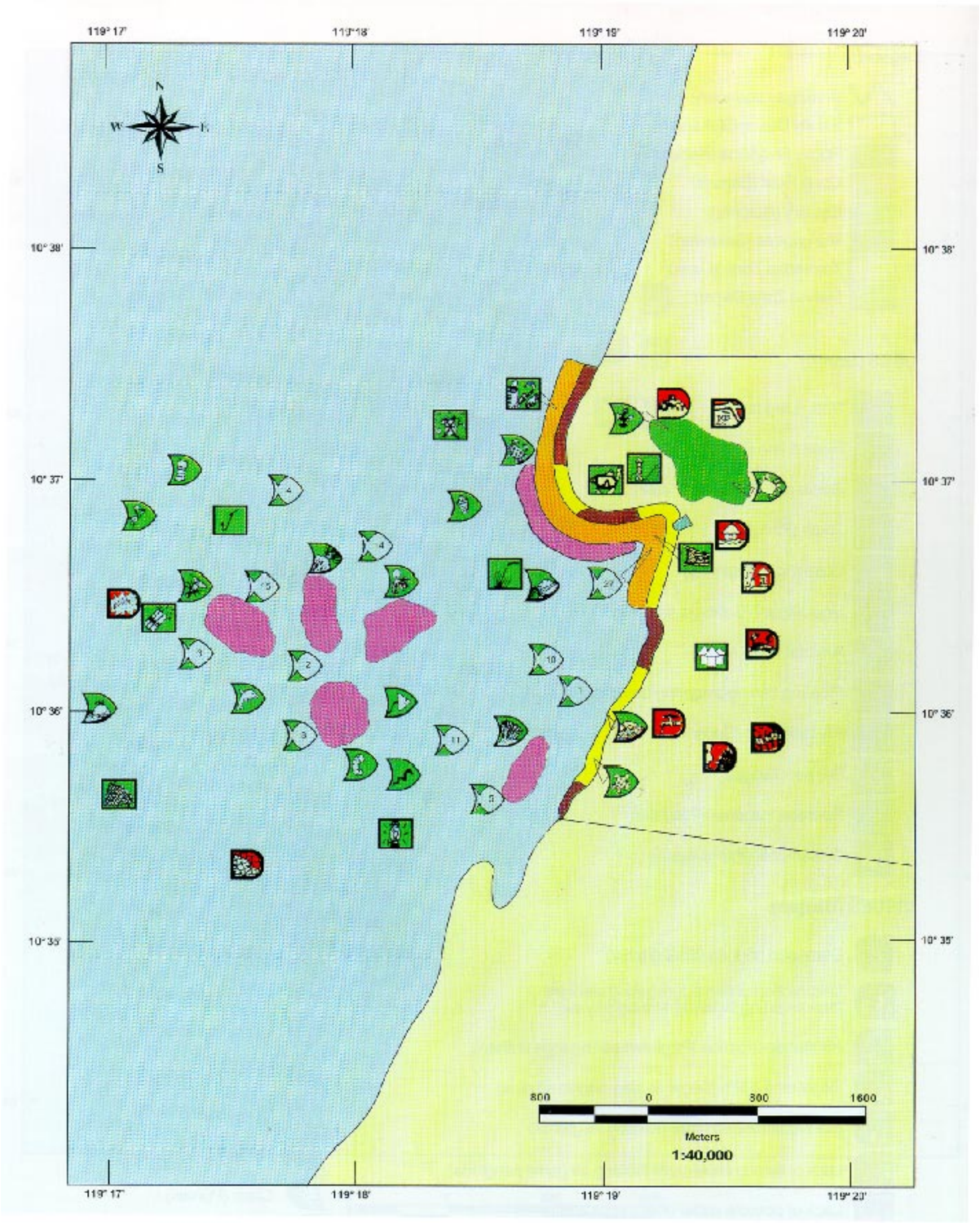


Figure 4.4. Coastal resource map of Alimanguan.

Legend :

- Barangay Boundary
- Sandy Beach (Buhangin)
- Rocky Shoreline (Kabatuhan)
- Inshore Reef Flats (Hibasan)
- Coral Reef (Bukana)
- Estuary (Bukana)
- Mangroves (Bakawan)
- Terrestrial Zone (Lupa)
- Marine Zone (Dagat)

USES (Gamit)

- Nets (Lambat)
- Hook & line (Kawil)
- Gleaning (Panginhas)
- Torch (Pangilaw)
- Artificial reef (Arong)
- Set net (Tangab)
- Squid jigger (Ganti-ganti)
- Explosives (Bungbong)
- Recreational area (Pasyalan)
- Settlements (Pamayanan)
- Mine site (Minahan)

ISSUES (Usapin)

- Mangrove cutting (Pagputol ng bakawan)
- Setting up fishponds (Pagtayo ng fishponds)
- Overfishing (Sobra-sobrang pangisda)
- Destructive fishing (Mapanirang pangisda)
- Lack of land tenure (Walang lupa)
- Lack of fishing implements (Kulang sa gamit pangisda)
- Lack of potable water (Kulang sa tubig)
- Damaged bridges (Sirang tulay)
- Selling of lands (Bilihan ng lupa)
- Floods (Pagbaha)

RESOURCES (Yamang Dagat)

1. Jack (Talakitok)
2. Spanish mackerel (Tanguige)
3. Indian mackerel (Burao)
4. Threadfin bream (Bisugo)
5. Snapper (Maya-maya)
8. Emperor bream (Kanuping)
10. Anchovy (Dilis)
11. Slipmouth (Sapsap)
15. Shadow kingfish (Kalapato)
14. Little tuna (Tulingan)
17. Milkfish fry (Bangus)
18. Algae (Lato, guso)
19. Marine turtle (Pawikan)
20. Sea snakes (Ahas)
21. Sea birds (Ibon)
22. Dolphin (Lumba-lumba)
23. Whale (Ambuhutan)
24. Cone shell (Liswi)
25. Sea cucumber (Balatan)
26. Squid (Pusit)
27. Cuttlefish (Tauban)
28. Octopus (Pugita)
29. Soft-shelled crab (Alimasag)
30. Mud crab (Alimango)
31. Lobster (Talaba)
32. Combfish (Pitik)
33. Mangroves (Bakawan)
34. Ray (Pagi)
35. Sand/rock (Buhangin/bato)

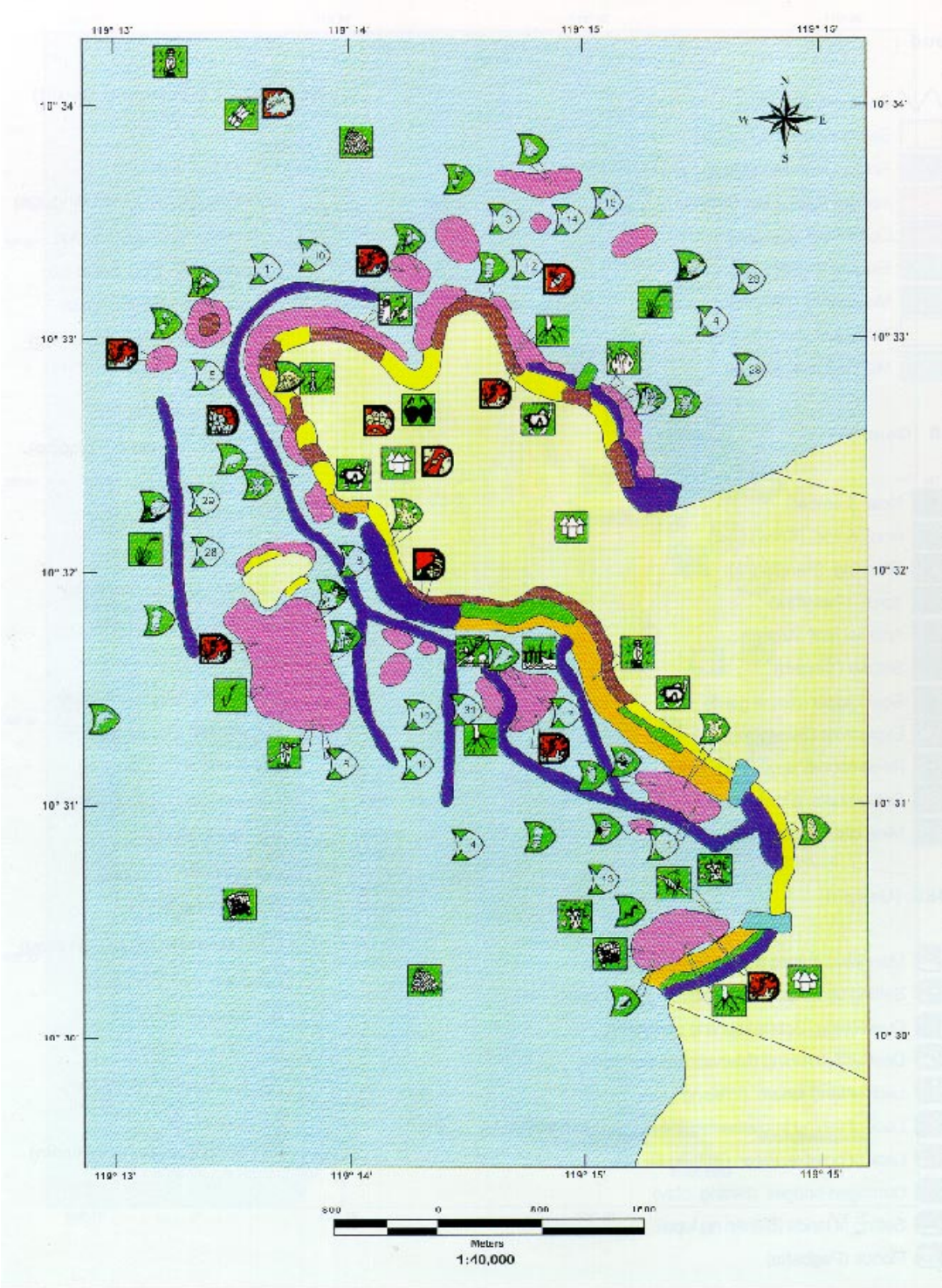


Figure 4.5. Coastal resource map of Poblacion.

Legend :

- Barangay Boundary
- Sandy Beach (Buhangin)
- Rocky Shoreline (Kabatuhan)
- Inshore Reef Flats (Hilusan)
- Seagrass Beds (Lusayan)
- Coral Reef (Bukana)
- Estuary (Bukana)
- Channels / Passes (Kanal)
- Mangroves (Bakawan)
- Terrestrial Zone (Lupa)
- Marine Zone (Dagat)

USES (Gamit)

- Traps (Bubo)
- Nets (Lambat)
- Hook & line (Kawil)
- Spear gun (Pana)
- Fish corral (Baklad)
- Torch (Pangilaw)
- Gleaning (Panginhas)
- Squid jigger (Ganti-ganti)
- Fish jigger (Hipon-hipon)
- Tourism (Turismo)
- Mariculture (Pearl farm)
- Port (Pantalan)
- Recreational area (Pasyalan)
- Marine sanctuary (Santuwaryo)
- Settlements (Pamayanan)
- Mine site (Minahan)
- Explosives (Bungbong)
- Plant- based polson (Tubli)

ISSUES (Usapin)

- Habitat destruction (Pagkawasak ng mga tirahan)
- Outside fishers (Mga dayo na mangingisda)
- Overfishing (Sobra-sobrang pangisda)
- Pollution (Dumi / basura)
- Destructive fishing (Mapanirang pangingisda)
- No alternative livelihood (Walang ibang kabuhayan)
- Organizational conflicts (Mga problema sa samahan)

RESOURCES (Yamang Dagat)

- Jack (Talakitok)
- Indian mackerel (Burao)
- Threadfin bream (Bisugo)
- Snapper (Maya-maya)
- Grouper (Lapu-lapu)
- Siganid (Danggit)
- Emperor bream (Kanuping)
- Anchovy(Dilis)
- Slipmouth (Sapsap)
- Silver-spotted grunt (Bakoko)
- Mullet (Banak)
- Sardines (Tamban)
- Gold-streaked scad (Salayginto)
- Little tuna (Tulingan)
- Shadow kingfish (Kalapato)
- Finler Scad (Salay-salay)
- Algae (Lato,guso)
- Sea cow (Dugong)
- Dolphin (Lumba-lumba)
- Marine turtle (Pawikan)
- Sea snakes (Ahas)
- Sea birds (Ibon)
- Oyster (Talaba)
- Cone shell (Liswi)
- Giant clam (Taklobo)
- Top shell (Samong)
- Cowrie (Lumban)
- Brown mussel (Wild tahong)
- Fan shell (Tarab)
- Sea cucumber (Balatan)
- Squid (Pusit)
- Cuttlefish (Tauban)
- Octopus (Pugita)
- Lobster (Banagan)
- Combfish (Pitik)
- Soft-shelled crab (Alimasag)
- Sand /rock (Buhangin/bato)

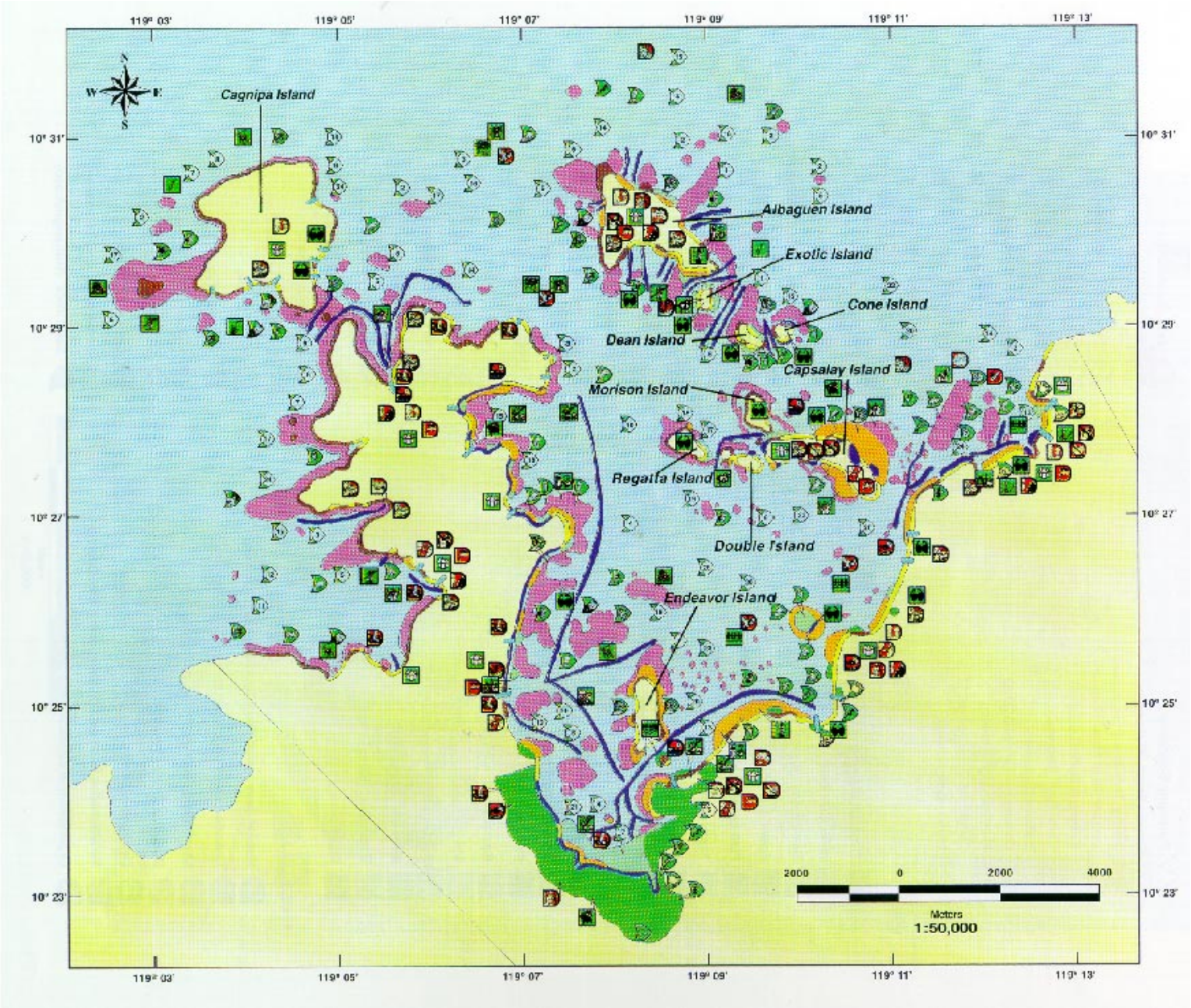


Figure 4.6. Coastal resource map of Port Barton.

Legend:

- Barangay Boundary
- Sandy Beach (Buhangin)
- Rocky Shoreline (Kabatuhan)
- Inshore Reef Flats (Hibasan)
- Seagrass Beds (Lusayan)
- Coral Reef (Bahura)
- Estuary (Bukana)
- Mangroves (Bakawan)
- Channels/Passes (Kanal)
- Terrestrial Zone (Lupa)
- Marine Zone (Dagat)

USES (Gamit)

- Traps (Bubo)
- Nets (Lambat)
- Hook & line (Kawil)
- Spear gun (Pana)
- Fish corral (Baklad)
- Torch (Pangilaw)
- Gleaning (Panginhas)
- Squid jigger (Ganti-ganti)
- Fish jigger (Hipon-hipon)
- Artificial reef (Arong)
- Floating fish aggregating device (Payaw)
- Sodium cyanide (Sosa)
- Commercial fishing (Dinagkong pangingisda)
- Mariculture (Pearl farm)
- Marine sanctuary (Santuwaryo)
- Port (Pantalan)
- Tourism (Turismo)
- Recreational area (Pasyalan)
- Mine site (Minahan)
- Settlements (Pamayanan)

ISSUES (Usapin)

- Setting up fishponds (Pagtayo ng fishpond)
- Habitat destruction (Pagsira ng mga tirahan)
- Outside fishers (Mga dayo na mangingisda)
- Overfishing (Sobra-sobrang pangisda)
- Siltation (Banlik o putik)
- Land reclamation (Tambakan)
- Beach erosion (Baybaying naagnas)
- Landslides (Pagguho ng lupa)
- Destructive fishing (Mapanirang pangingisda)
- Lack of land tenure (Walang lupa)
- Strict laws (Mahigpit ang batas)
- No alternative livelihood (Walang ibang kabuhayan)
- Organizational conflicts (Mga problema sa samahan)
- Lack of fishing implements (Kulang sa gamit pangisda)
- Destruction of fish aggregating devices (Nakawan ng isda/pagsira ng payaw)
- No schools (Walang paaralan)
- Inadequate health care (Kulang sa gamot)
- Illegal nipa claim (Illegal na pag-angkin ng nipa)
- Lack of potable water (Kulang sa tubig)
- Restricted access to fishing grounds (Bawal mangisda)

RESOURCES (Yamang Dagat)

1. Jack (Talakitok)
2. Spanish mackerel (Tanguige)
3. Indian mackerel (Burao)
4. Threadfin bream (Bisugo)
5. Snapper (Maya-maya)
6. Grouper (Lapu-lapu)
7. Siganid (Danggit)
8. Emperor bream (Kanuping)
9. Fusilier (Sulid)
10. Anchovy (Dilis)
11. Slipmouth (Sapsap)
12. Silver-spotted grunt (Bakoko)
13. Mullet (Banak)
14. Little tuna (Tulingan)
15. Shadow kingfish (Kalapato)
16. Round scad (Galunggong)
17. Parrotfish (Mulmol)
18. Yellow-backed fusilier (Dalagang-bukid)
19. Needlefish (Balo)
20. Cutlassfish (Espada)
21. Snapper (Mangagat)
22. Mackerel (Hasa-hasa)
23. Hardtailed scad (Paktan)
24. Big-eyed scad (Matambaka)
25. Yellowfin tuna (Tambakol)
26. Goatfish (Salmolette)
- Marine turle (Pawikan)
- Sea snakes (Ahas)
- Algae (Lato, guso)
- Sea cow (Dugong)
- Dolphin (Lumba-lumba)
- Whale (Ambuhutan)
- Sea birds (Ibon)
- Oyster (Talaba)
- Cone shell (Liswi)
- Giant clam (Taklobo)
- Shrimps (Hipon)
- Lobster (Banagan)
- Combfish (Pitik)
- Sea cucumber (Balatan)
- Squid (Pusit)
- Cuttlefish (Tauban)
- Octopus (Pugita)
- Soft-shelled crab (Alimasag)
- Mud crab (Alimango)
- Mangroves (Bakawan)
- Sand/rock (Buhangin/bato)
- Top shell (Samong)
- Cowrie (Lumban)
- Pearl oyster (Tipay)
- Fan shell (Tarab)
- Turban shell (Sihi)
- Spider shell (Saang)
- Abalone (Lapas)
- Clam (Punaw)

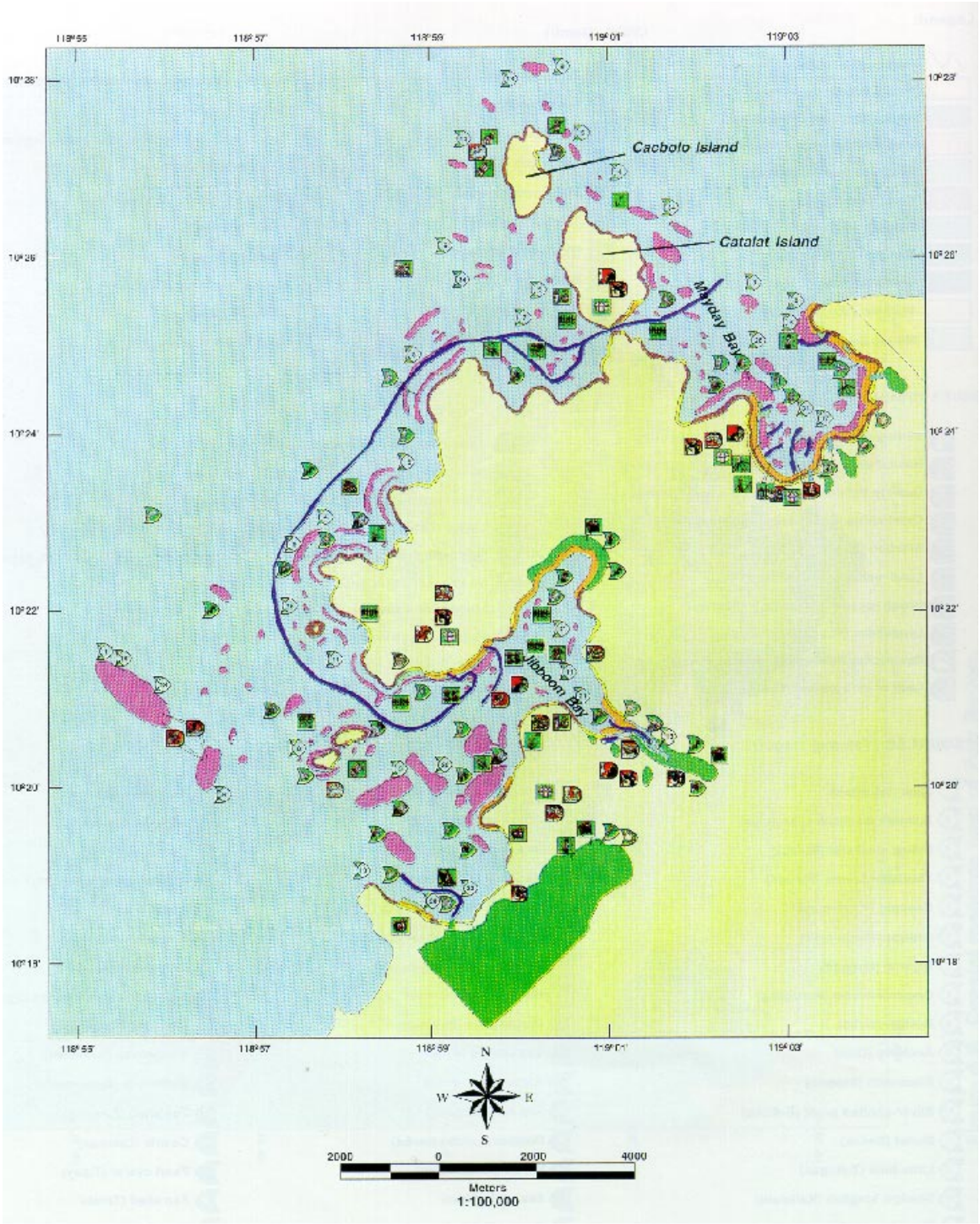


Figure 4.7. Coastal resource map of Caruray.

Legend:

- Barangay Boundary
- Sandy Beach (Buhangin)
- Rocky Shoreline (Kabatuhan)
- Inshore Reef Flats (Hibasan)
- Seagrass Beds (Lusayan)
- Coral Reef (Bahura)
- Estuary (Bukana)
- Mangroves (Bakawan)
- Channels/Passes (Kanal)
- Terrestrial Zone (Lupa)
- Marine Zone (Dagat)

ISSUES (Usapin)

- Destructive fishing (Mapanirang pangingisda)
- Inadequate health care (Kulang sa gamot)
- Beach erosion (Baybaying naagnas)
- Habitat destruction (Pagkawasak ng mga tirahan)
- Lack of fishing implements (Kulang sa gamit pangisda)
- Lack of land tenure (Walang lupa)
- Illegal nipa claim (Illegal na pag-angkin ng nipa)
- Landslides (Pagguho ng lupa)
- Organizational conflicts (Mga problema sa samahan)
- Siltation (Banlik o putik)
- Pollution (Dumi/basura)
- No alternative livelihood (Walang ibang kabuhayan)
- Outside fishers (Mga dayo na mangingisda)

USES (Gamit)

- Traps (Bubo)
- Nets (Lambat)
- Hook & line (Kawil)
- Spear gun (Pana)
- Fish corral (Baklad)
- Torch (Panglaw)
- Gleaning (Panginhas)
- Squid jigger (Canti-ganti)
- Fish jigger (Hipon-hipon)
- Artificial reef (Arong)
- Seaweed farm (Tambalang)
- Floating fish aggregating devices (Payaw)
- Fry bulldozer (Sudsod)
- Explosives (Bungbong)
- Plant-based poison (Tubli)
- Sodium cyanide (Sosa)
- Commercial fishing (Dinagkong pangisda)
- Port (Pantalan)
- Recreational area (Pasyalan)
- Mine site (Minahan)
- Settlements (Pamayanan)

RESOURCES (Yamang Dagat)

- Jack (Talakitok)
- Indian mackerel (Burao)
- Threadfin bream (Bisugo)
- Snapper (Maya maya)
- Grouper (Lapu-lapu)
- Siganid (Danggit)
- Emperor bream (Kanuping)
- Fusilier (Sulid)
- Anchovy (Dilis)
- Slipmouth (Sapsap)
- Little tuna (Tulingan)
- Mullet (Banak)
- Shadow kingfish (Kalapato)
- Round scad (Galunggong)
- Parrotfish (Mulmol)
- Yellow-backed fusilier (Dalagang-bukid)
- Cutlassfish (Espada)
- Snapper (Mangagat)
- Mackerel (Hasa-hasa)
- Sardines (Tamban)
- Finler scad (Salay-salay)
- Threadfin bream (Sagisi)
- Algae (Lato, guso)
- Sea birds (Ibon)
- Marine turtle (Pawikan)
- Crocodile (Buwaya)
- Sea snakes (Ahas)
- Oyster (Talaba)
- Cone shell (Liswi)
- Giant clam (Taklobo)
- Top shell (Samong)
- Cowrie (Lumban)
- Pearl oyster (Tipay)
- Fan shell (Tarab)
- Turban shell (Sihi)
- Spider shell (Saang)
- Abalone (Lapas)
- Clam (Punaw)
- Shrimps (Hipon)
- Lobster (Banagan)
- Combfish (Pitik)
- Soft-shelled crab (Alimasag)
- Mud crab (Alimango)
- Squid (Pusit)
- Cuttlefish (Tauban)
- Octopus (Pugita)
- Dolphin (Lumba-lumba)
- Mangroves (Bakawan)
- Sand/Rock (Buhangin/bato)

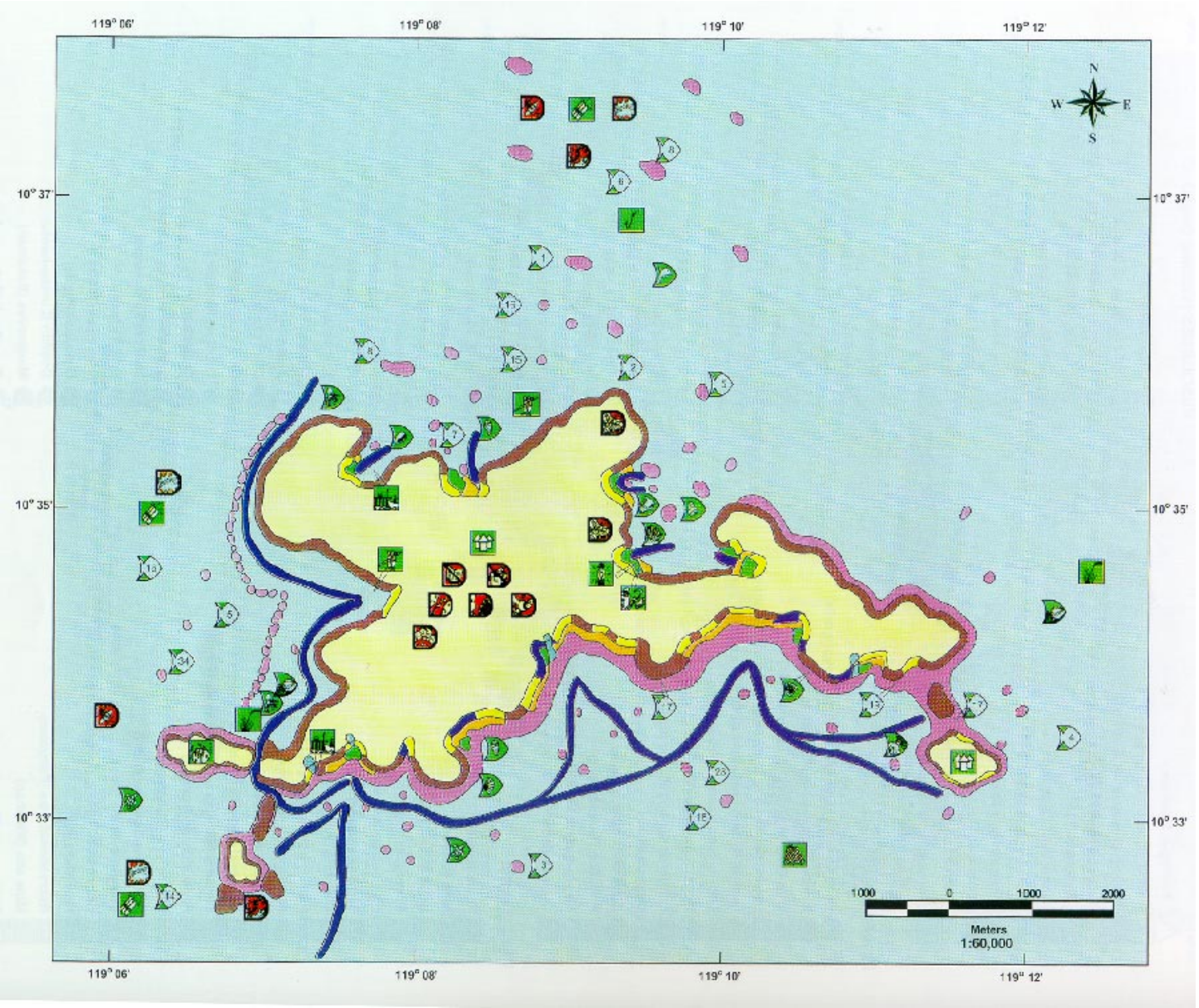


Figure 4.8. Coastal resource map of Boayan, Island.


Legend :
Barangay Boundary
Sandy Beach (Buhangin)
Rocky Shoreline (Kabatuhan)
Inshore Reef Flats (Hibasan)
Seagrass Beds (Lusayan)
Coral Reef (Bahura)
Estuary (Bukana)
Channels/Passes (Kanal)
Mangroves (Rakawan)
Terrestrial Zone (Lupa)
Marine Zone (Dagat)
USES (Gamit)
Nets (Lambat)
Hook & line (Kawil)
Spear gun (Pana)
Torch (Pangilaw)
Gleaning (Panginhas)
Squid jigger (Ganti-ganti)
Explosives (Bungbong)
Port (Pantalan)
Marine sanctuary (Santuwaryo)
Settlements (Pamayanan)
ISSUES (Usapin)
Habitat destruction (Pagkawasak ng mga tirahan)
Outside fishers (Mga dayo na mangingisda)
Landslides (Pagguho ng lupa)
Destructive fishing (Mapanirang pangingisda)
No alternative livelihood (Walang ibang kabuhayan)
Organizational conflicts (Mga problema sa samahan)
Lack of fishing implements (Kulang sa gamit pangisda)
Destruction of fishing aggregating devices (Nakawan ng isda/pagsira ng payao)
No schools (Walang paaralan)
Inadequate health care (Kulang sa gamot)
RESOURCES (Yamang Dagat)
Jack (Talakitok)
Spanish mackerel (Tanguige)
Indian mackerel (Burao)
Threadfin bream (Bisugo)
Snapper (Maya-maya)
Grouper (Lapu lapu)
Threadfin bream (Sagisi)
Siganid (Danggit)
Emperor bream (Kanuping)
Sardines (Tamban)
Little tuna (Tulingan)
Shadow kingfish (Kalapato)
Round scad (Galunggong)
Parrotfish (Mulmol)
Yellow-backed fusilier (Dalagang bukid)
Needlefish (Balo)
Algae (Lato, guso)
Marine turtle (Pawikan)
Oyster (Talaba)
Cone shell (Liswi)
Giant clam (Taklobo)
Top shell (Samong)
Cowrie (Lumban)
Fan shell (Tarab)
Squid (Pusit)
Cuttlefish (Tauban)
Octopus (Pugita)
Dolphin (Lumba-lumba)

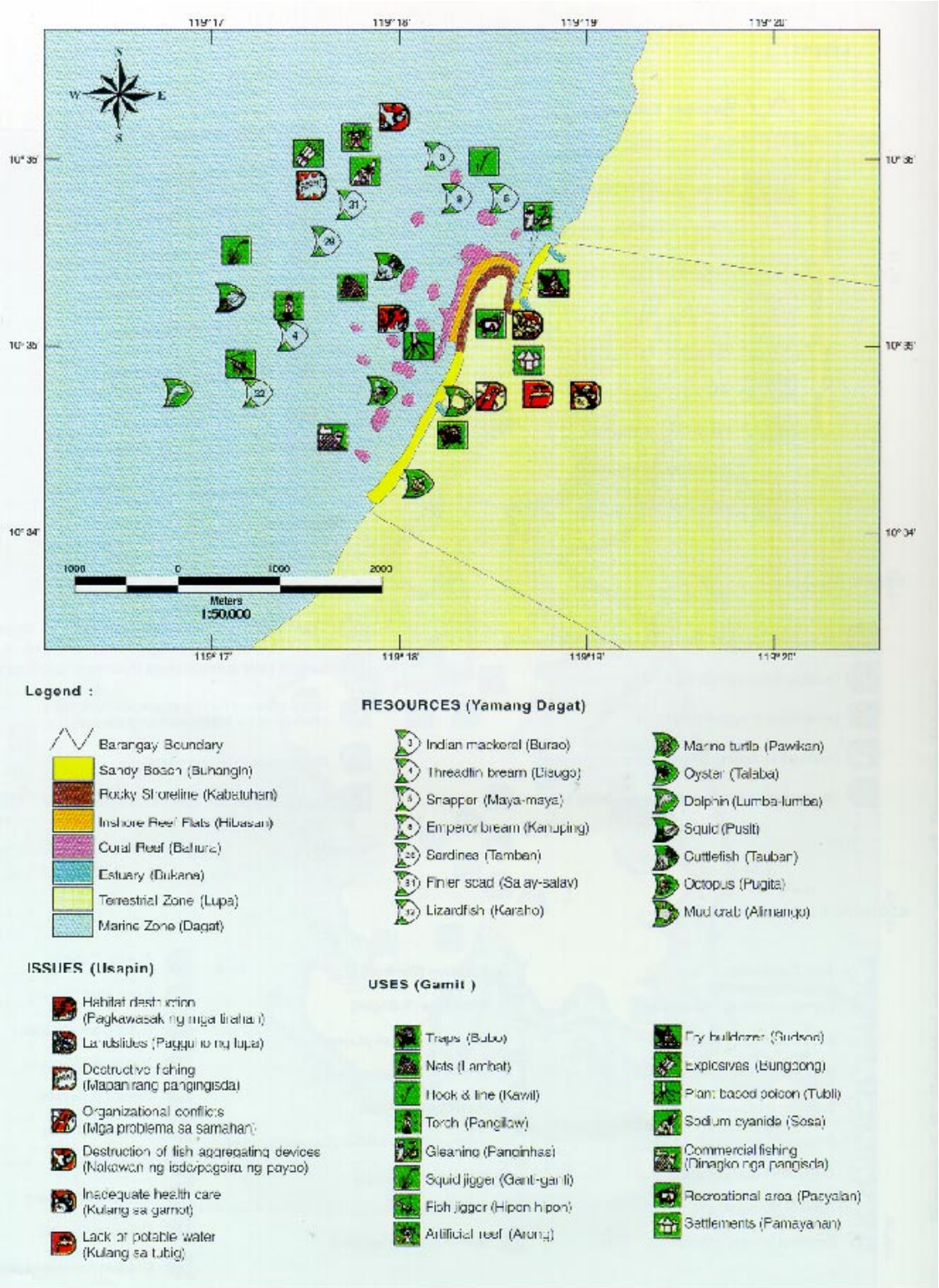


Figure 4.9. Coastal resource map of San Isidro.

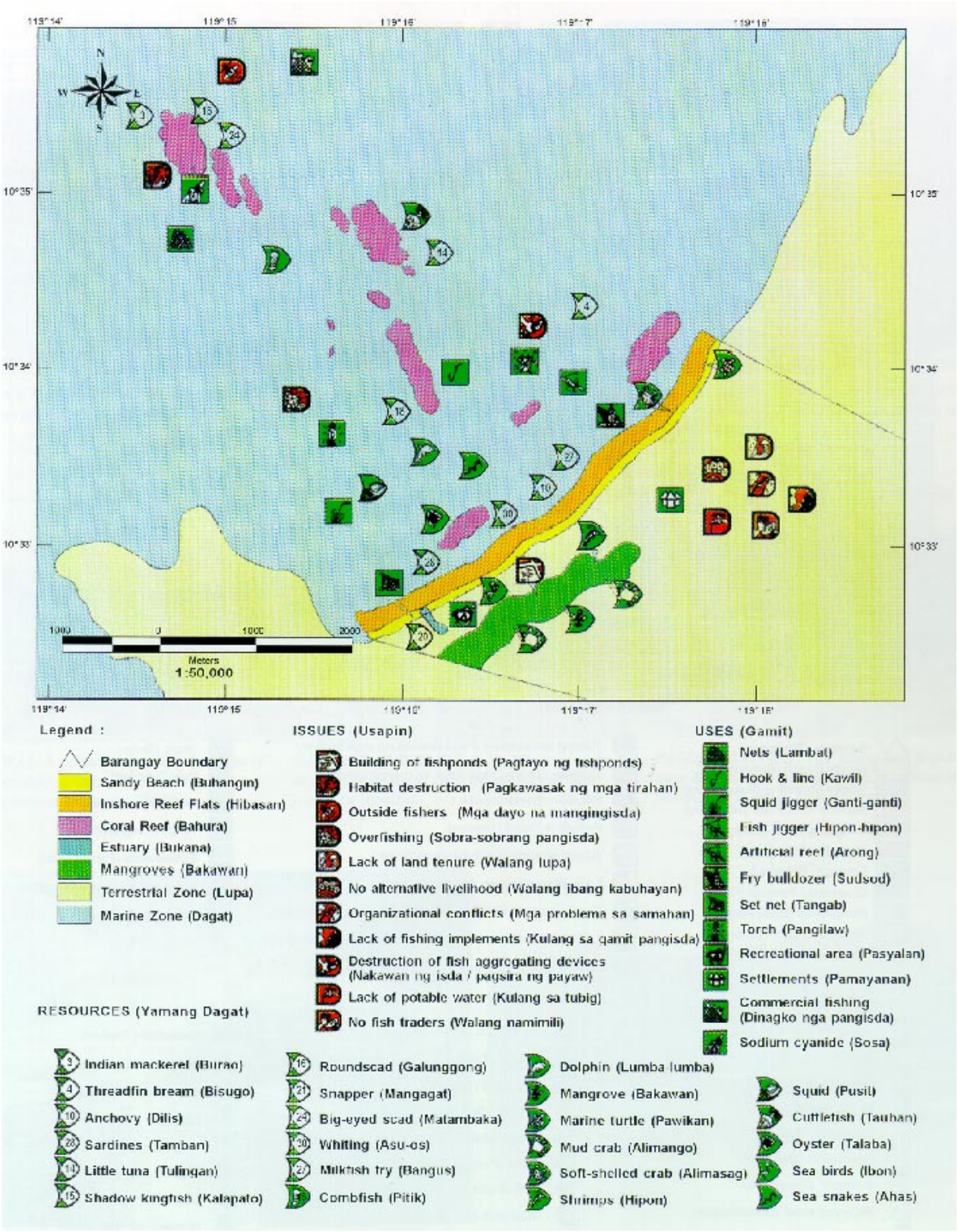


Figure 4.10. Coastal resource map of New Agutaya.

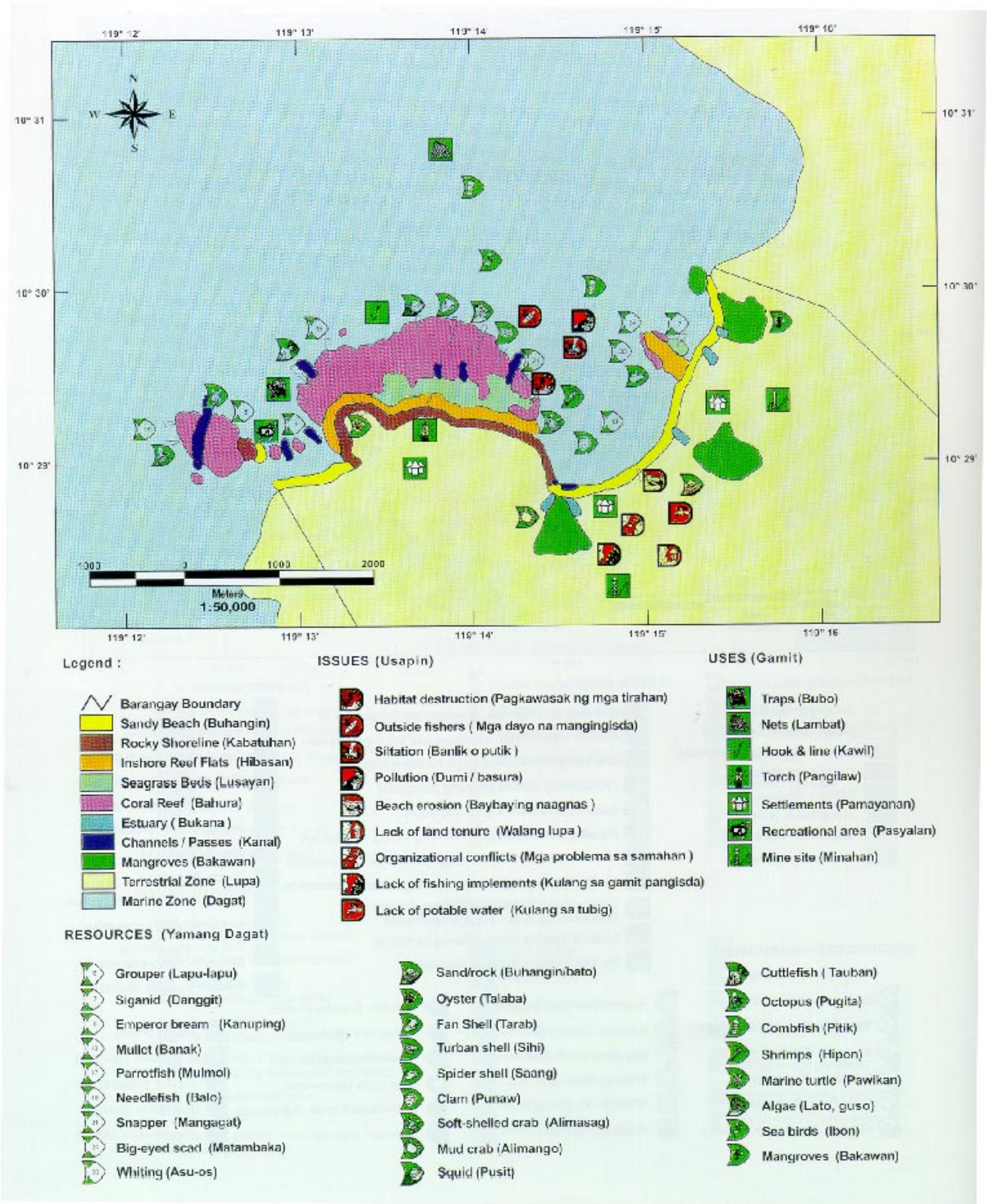


Figure 4.11. Coastal resource map of New VIllafria.

WOMAN'S WORLD. Women fishers do their share in mapping the coastal resources of Old Site in Barangay Caruray.

YOUNG TOWN. San Vicente has a relatively young population. In 1990, nearly 65% of residents belonged to the 0-24 age bracket, according to the Municipal Planning and Development Office.

SAIL AWAY. A tourist boat sits on the shore of Port Barton at sunset after a day's work ferrying visitors to nearby islands.

SUN, SAND AND SEA. There's white sand as far as the eye can see at Long Beach, viewed here from New Agutaya.

PADDLE AND PLAY. Two young boys paddle their bancas near the mouth of a mangrove river flowing out to sea in New Agutaya.

TAKE FIVE. Members of the PCRA team take a breather at the blowhole on Garcia Island, facing the open sea, in Barangay Caruray.

GOD-GIVEN HIGHWAY. Fishing boats making their way along the placid waters of a mangrove river is a familiar sight at the Old Site in Barangay Caruray.

REEF CHECK. Teddy Mandal (left) and Dong-dong Alarde, two of the members of the PCRA team, compute the results of their participatory assessment of coral reefs on a plastic slate as soon as they get out of the water. Local fishers who accompany the PCRA team members in conducting habitat assessment learn to monitor the changes in the marine environment from the activity.

SHELL POWER. The tarab *or fan shell is one of the commercially important resources found in the coastal area of San Vicente.*

DOWNSIDE OF DEVELOPMENT. Mining for silica and the construction of a pier have caused siltation and beach erosion in sitio Sta. Cruz, Barangay Caruray.

SILICA TROUBLE. Development causes pollution from an exposed silica mine in Naonao, Port Barton.

SEA GARDEN. Staffers of the Technical Assistance Office check out the seaweed farm in Gawid, one of the sitios of Caruray.

ONE BOAT TOO MANY. Commercial fishing boats, such as this one, have been blamed for the rapid depletion of coastal resources all over the Philippines.

THE PLACE THEY CALL HOME. Many fishers live in wooden shacks on the water. This settlement is located in Pagdanan, Barangay Port Barton.

LOCALS KNOW BEST. Participants help the PCRA team identify the various resources they have listed in the barangay maps.

SOILED SEA. Lack of toilets and pollution from domestic wastes are major concerns in San Vicente, where many migrants have settled along beach fronts that are not reached by government programs.

HOMEGROWN LEADERS. Community leaders from various villages take turns shading the coastal resource map of San Vicente during the municipal PCRA training at the Poblacion.

Chapter 5
THINGS YOU CAN FIND ON THE SAN VICENTE COASTLINE
(Geography and Environmental Features)

San Vicente lies on the west coast of Palawan, on the shores of the South China Sea. It is sandwiched between Puerto Princesa City to the south and the municipality of Taytay to the north, and bounded by the municipality of Roxas to the east.

San Vicente has a narrow coastline of sandy beaches, mangrove forests, coves and rocky outcrops stretching 170 kms on the mainland.

It has 10 barangays, including 24 islands. The terrain in the mainland is generally rugged, with the scant lowland areas embraced by the vast Pagdanan and Central mountain ranges. A narrow coastline of sandy beaches, mangrove forests, coves, and rocky outcrops stretches 170 kilometers on the mainland. Steep slopes (18 degrees and above) cover 82% of the municipality, with the highest elevation recorded at 703 meters in the Pagdanan Range. Four types of soil are found here: Sibuyan silty clay, silty clay loam, Coron clay loam, and the dominant mountain soil.

Land use classification is not clearly defined, and there are differences between the Department of Environment and Natural Resources (DENR) and municipal figures (Table 5.1). The DENR places the town's total land area at

79,303.76 hectares, 68,834.13 hectares of which are forest reserves and the rest alienable and disposable land (meaning titles can be awarded to private claimants). The municipal government, on the other hand, approved a Land and Water Use Map in 1994 which placed the total land area at 82,057 hectares.

CLASSIFICATION

Table 5.1. Land and water use classification of San Vicente (SEP-SVP 1994).

Seven bays	**AREA (in hectares)**	**PERCENTAGE OF LAND AREA**
A. Land Use		
Settlement Zone	890.00	1.08
Agricultural Development Zone	7,844.00	9.56
Forest Zone	42,823.75	52.19
Watershed Area	8,663.25	10.56
Wilderness Area/Protected Zone	3,638.00	4.43
Communal Forest	5,000.00	6.09
Tourist Development Zone	447.50	.55
Industrial Zone	451.50	.55
Mangrove Forest	1,538.00	1.88
TOTAL	**82,057.00**	**100.00**
B. Water Use		
Municipal Fishing Grounds	155,701.99	95.05
Coral Reef Protection Zone	3,377.74	2.06
Marine Recreation Zone	4,490.00	2.74
Marine Sanctuary	235.77	.15
TOTAL	**163,865.50**	**100.00**

serve as the main fishing grounds in the municipality: Jibboom Bay, Sta. Cruz Bay, Mayday Bay, Queen's Bay, Pagdanan Bay, Kemdeng Bay, and Imuruan Bay. The town's 24 islands are shown in Table 5.2.

One of the unique geological features of San Vicente's landscape is the blowhole on Garcia Island in Caruray, which produces an audible hissing sound when waves crash into the island's rocky shore and rush back to the sea. At the northern tip of the

Table 5.2. Islands in San Vicente.

BARANGAY	NAME OF ISLAND	SIZE (in hectares)
Binga	Imuruan	136.05
	Manambarao	5.00
New Canipo	Lampiligan	14.14
Poblacion	Boayan	1,327.31
	Niaporay	19.43
	Talontonen	13.18
	Mayakli	4.71
	Mialbok	24.34
Port Barton	Albaguen	175.62
	Cagnipa	507.94
	Exotic	6.41
	Capsalay	79.32
	Inoladoan	17.24
	Malindag	3.94
	Bongot	10.55
	Ibalalon	38.39
	Kayoya	20.72
	Moraday	18.23
	Paradise	5.00
	Ranged	4.00
New Villafria	Tandan	4.28
Caruray	Catalat	261.12
	Caclobo	80.31
	Bay Island	80.00

municipality, Wedge Island stands as a lonely beacon offshore and is a favorite site of illegal fishers due to the rich marine resources surrounding the rocky islet.

CLIMATE AND RAINFALL

San Vicente enjoys equal parts of rain and sunshine. December to May provides six months of generally dry weather, while June to November is usually wet.

Monsoon winds determine the fate of most fishing villages. When the northeast winds (*amihan*) start blowing in November, most fishers say they do not brave the seas as strong waves can last for days. The southwest monsoon (*habagat*), which visits in June, can bring really bad weather especially when there is a storm, but this type of wind is short-lived and allows a respite for fishers to go out to sea. In addition, fishers in San Vicente talk of two other types of wind that can affect the weather: *salatan,* which comes from the south, and *daplak,* which comes from the north. Local residents also have a term for squalls, which they call *subasko*.

Calendar diagrams drawn by fishers as part of the PCRA activity show that bad

weather prevails in the months of August and September, when the southwest monsoon combines with the rainy season to spawn big waves that hamper fishing activities. April and May are the calmest months, when the monsoon winds have died down and the weather is generally dry. This is the time when the seas are almost glassy and smooth, and it also coincides with the season for squid which starts in March. Samples of calendar diagrams are shown in Figures 5.1 and 5.2.

December to May provides six months of generally dry weather, while June to November is usually wet.

OCEANOGRAPHY

A study conducted by Silliman University in 1996 shows that ocean current patterns in San Vicente generally flow towards the northeast. The majority of the sites register slow speeds ranging from 0.039 to 0.144 meter/sec except in Pagdanan Pt. where current speeds reach 0.302 meter/sec. The general direction of ebb currents is still northeast, and no site shows reversal of current flow as the tide reverses. According to Silliman researchers, this indicates that tidal forces do not have an effect on current patterns, and that water transport from San Vicente to the northeastern sections of the Palawan mainland is efficient since water movement, regardless of tidal conditions, is always northeast, parallel to the coastline.

Water quality in San Vicente is found to be generally good, with low levels of coliform. Based on the criteria set by the DENR, all sites are safe for the propagation, survival, and harvesting of shellfish. Municipal waters also passed the requirement for establishment of tourist zones, national parks, and coral reef parks. Data on waste disposal correlated with the low counts of coliform, an indicator of human and domestic waste contamination. Most residents have water-sealed and Antipolo toilets (61.4%) and they either burn or bury their garbage.

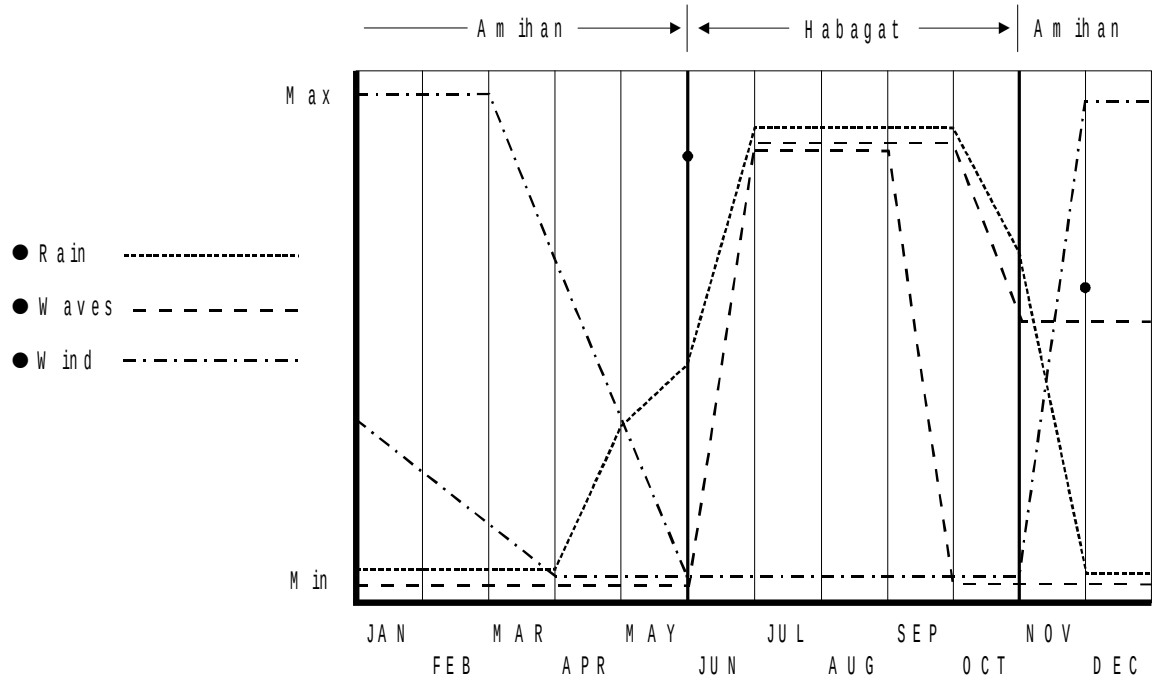


Figure 5.1. Calendar diagram for weather patterns in Sitio Boding and Proper, Binga, PCRA 1997.

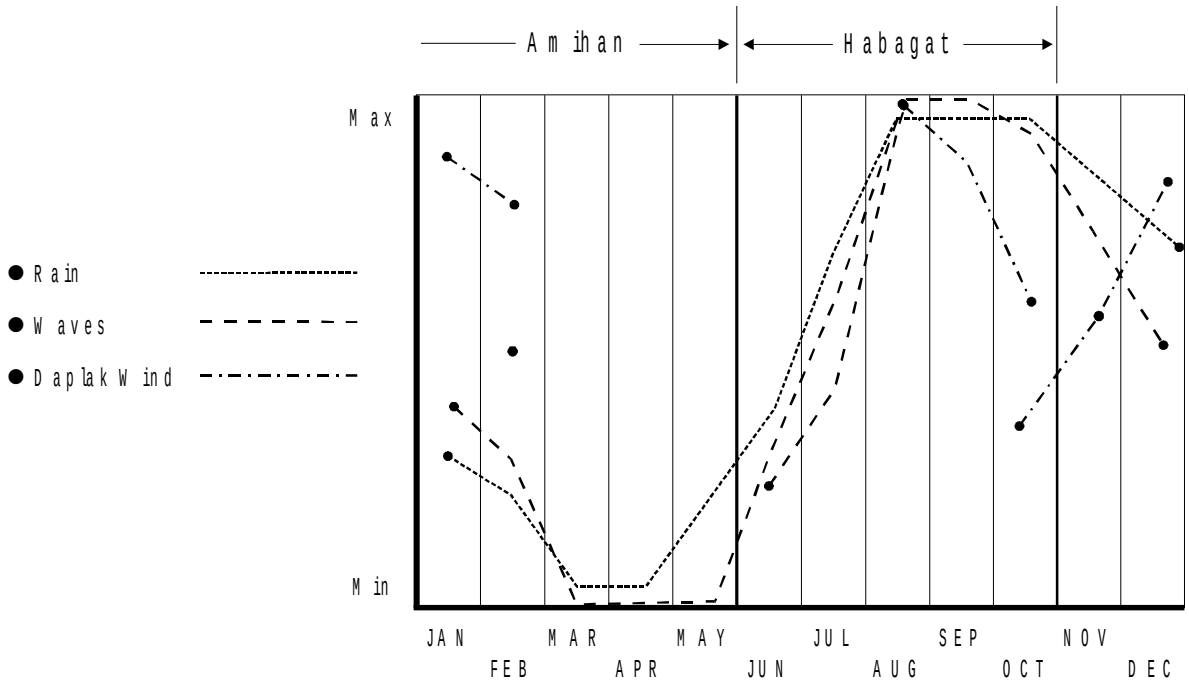


Figure 5.2. Calendar diagram for weather patterns in Sitio Gawid, Caruray, PCRA 1997.

Table 5.3. Coliform levels* in the waters of San Vicente (SUML 1996).

STATIONS	NEARSHORE	0.5 KM OFFSHORE	1 KM OFFSHORE
Port Barton	37	35	9
Poblacion	3	8	63
Boayan Island	4	17	3
New Agutaya	12	6	2
MEAN	**14**	**16.5**	**19.2**

CATEGORY	DESCRIPTION
Class SA (MPN = 70)	Suitable for propagation, survival and harvesting shellfish for commercial purposes. Suitable as tourist zones, establishment of national marine parks and coral reef parks.
Class SB (MPN = 1000)	Recreational Water Class I - Areas regularly used for public bathing, swimming, skin diving, etc. Fishery Water Class I - spawning areas for *Chanos chanos* (bangus) and similar species.
Class SC (MPN = 5000)	Recreational Water Class II - Boating, etc. Water Class II - commercial and sustenance fishing. Marshy and for mangrove areas are declared as fish and wildlife sanctuaries.

* The numbers represent the most probable number (MPN) of total coliform per 100 ml of seawater sampled in the four stations. Three samples were taken in each station. The DENR sets a maximum coliform level of 70 for water quality suitable for marine parks and tourist zones.

Chapter 6
TREASURES UNDER THE SEA (AND ALONG THE COAST, TOO)
(Coastal Habitats and Resources)

San Vicente is rich in fish and other marine resources. At the start of the nationwide implementation of the CRMP in May 1996, 35 researchers from Silliman University conducted a survey in San Vicente. The research team assessed the town's coastal zones, gathering data on vegetation, marine life, composition of the sea bottom, water quality and currents, plankton, fish catch, and the socioeconomic conditions of fishers.

San Vicente is rich in fish and other marine resources.

The team established 108 sampling stations (Figure 6.1) for the following:

- 19 for mangroves
- 12 shallow transect stations
- 8 for corals
- 10 for soft-bottom
- 8 for plankton
- 4 for coliform
- 7 for water current
- 8 for fish visual census
- 14 for test-fishing
- 9 for fisheries profile
- 9 for socioeconomic indicators

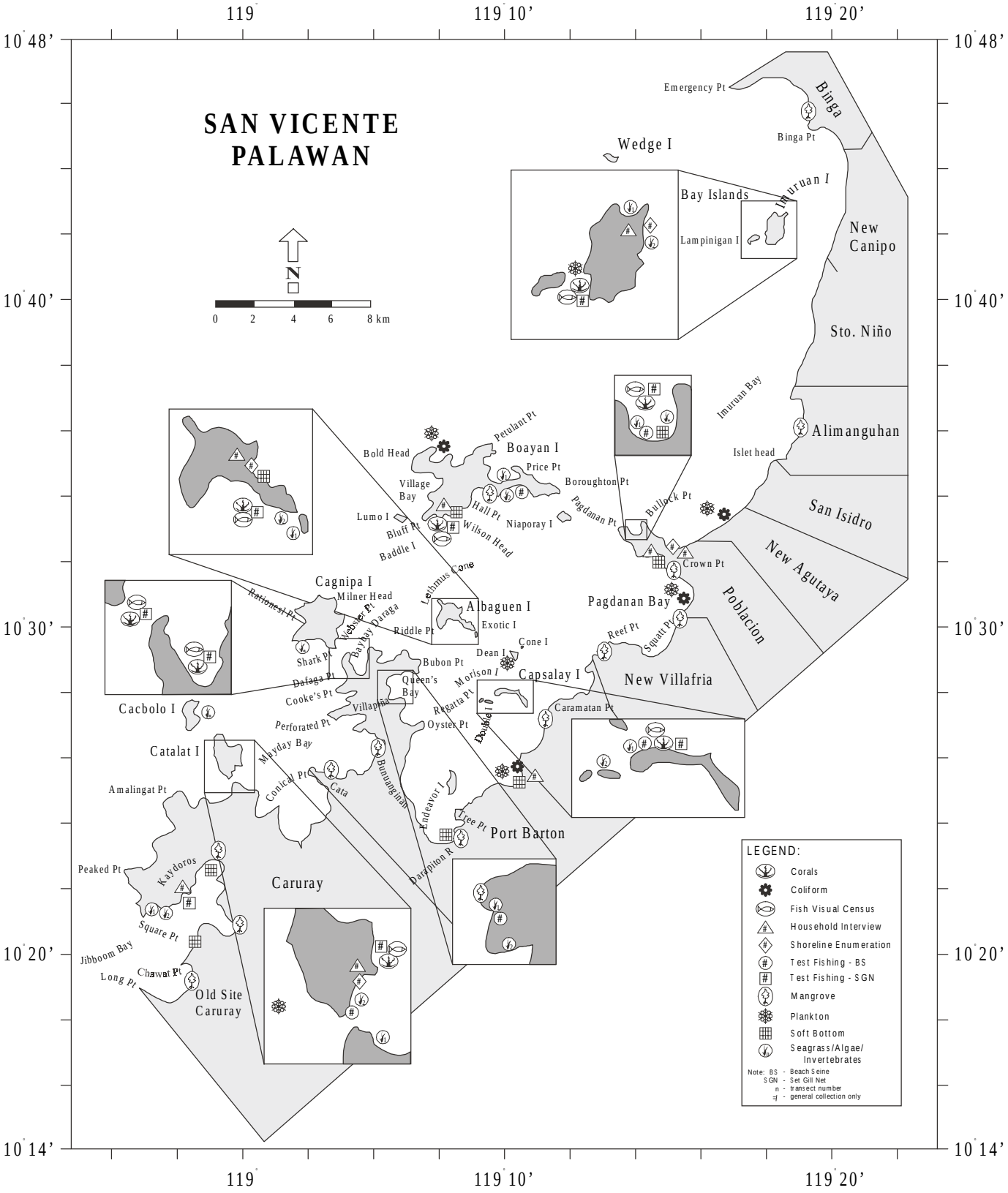


Figure 6.1. Sampling stations of the Silliman University study in San Vicente, 1996.

The results of the research on coastal habitats and resources are summarized below:

REEF FISH

A visual census found 160 species of finfish, squid and octopii in 29 families in the coral reef areas of the municipality (Figure 6.2). *Palata* or damselfishes, and wrasses, had the highest number of species. Most of the fishes recorded were reef species; there were no pelagics, such as tuna and mackerel (Table 6.1). Capsalay had the greatest number of species and highest density of fish. Imuruan had the most target species sought by fishers, the most large predatory species, and the highest average number of individuals. In terms of fishing pressure, Baybay Daraga appeared to have suffered most — the census noted the absence of large predators there.

A visual census found 160 species of finfish in 29 families in the coral reef areas of the municipality.

The abundance of reef species in seagrass beds underscores the importance of seagrasses as breeding or nursery grounds for fish and the need for this ecosystem to be protected. Test fishing with a beach seine in seagrass and algal beds yielded 82 species of finfish in 36 families. Capsalay Island yielded the highest biomass of fish,

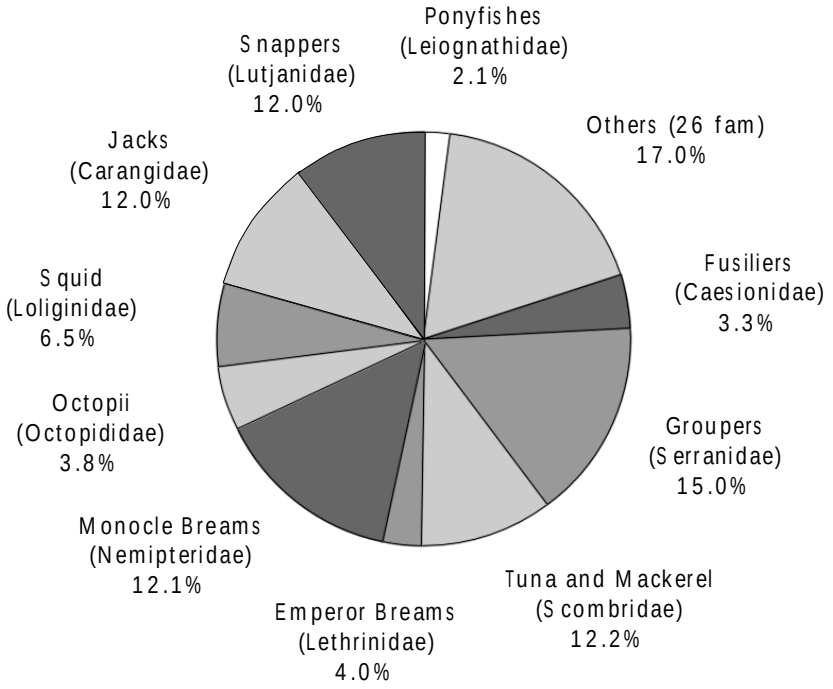


Figure 6.2. Catch composition by fish families in San Vicente (SUML 1996).

Table 6.1. Most abundant families of fishes in San Vicente (SUML 1996).

STATION	RELATIVE ABUNDANCE (%)			
	Number of Species		Number of Individuals	
Capari	Pomacentridae (Damsels)	27.5	Pomacentridae	53.5
	Labridae (Wrasses)	22.5	Caesionidae (Fusiliers)	24.0
	Scaridae (Parrotfishes)	7.5	Labridae	8.7
	Chaetodontidae (Butterflyfishes)	7.5		
Catalat	Pomacentridae	30.7	Pomacentridae	78.9
	Labridae	22.6	Siganidae (Rabbitfishes)	12.0
	Chaetodontidae	9.7	Labridae	5.9
Baybay Daraga	Labridae	30.8	Pomacentridae	49.8
	Pomacentridae	25.0	Labridae	23.6
	Chaetodontidae	11.5	Apogonidae	17.1
Shark Point	Pomacentridae	34.0	Pomacentridae	67.7
	Labridae	20.8	Apogonidae	15.6
	Chaetodontidae	7.6	Siganidae	7.2
	Serranidae (Groupers)	7.6		
Casuyan	Pomacentridae	37.5	Pomacentridae	88.2
	Labridae	29.2	Labridae	8.5
	Chaetodontidae	8.3	Sphyraenidae (Barracudas)	1.1
Albaguen	Pomacentridae	33.9	Pomacentridae	90.0
	Labridae	25.4	Labridae	4.6
	Chaetodontidae	8.5	Centriscidae (Shrimpfishes)	3.3
Capsalay	Pomacentridae	34.4	Pomacentridae	82.8
	Labridae	21.9	Apogonidae	10.0
	Apogonidae (Cardinalfishes)	6.3	Labridae	2.2
	Chaetodontidae	6.3		
Imuruan	Labridae	30.0	Pomacentridae	77.0
	Pomacentridae	18.3	Labridae	19.0
	Serranidae	6.7	Acanthuridae	0.9
	Acanthuridae (Surgeonfishes)	6.7		
	Chaetodontidae	6.7		

and Poblacion recorded the lowest. The highest species richness was noted in Queen's Bay, the lowest in Catalat. Capsalay showed the best catch per unit effort, yielding 18 kg per man-hour (high by Philippine standards).

A comparison of sizes with previous data indicates that most species have maintained their growth, which in turn suggests that San Vicente has not been overfished unlike other areas in the country where most fishes barely reach their common reported lengths. Nevertheless, the Silliman University team noted that "the tendency toward exploitation is great and overharvesting may occur if fishing is not regulated."

COMMERCIAL FISHING POTENTIAL

To determine the level of abundance of marine species, the researchers conducted test fishing using 3 gill nets measuring 75 meters x 2 meters each. The nets had varying mesh sizes: 1.5 cm, 2.5 cm, and 5 cm. The researchers found that 75% of their catch was composed of finfish (including one tiger shark), and that the majority of this were reef species. The highest volume of catch was recorded in Albaguen, the lowest in Caruray. In terms of biomass, the species *"timbugan"* (goatfish - Mullidae) yielded the greatest number. The highest species diversity seen was for *"palata"* (damselfish - Pomacentridae). The researchers also noted that dried squid was an important source of income for fishers, especially on Imuruan Island where it was sold at P180 to P220/ kg.

Imuruan Island was noted to suffer the least from fishing pressure, yielding the greatest number of species and individuals. The highest fishing pressure was noted in Baybay Daraga, where no predatory species were found.

In the 1996 annual report of San Vicente, the SEP-SVP reported that its coastal marine project protected and managed the following habitats:

- mangroves - 1,538 hectares
- fish sanctuaries - 42.77 hectares in Binga, 45 hectares in Poblacion, 123 hectares in Port Barton, 25 hectares in Caruray
- artificial reefs - 20 hectares in Binga, Port Barton and Caruray
- seagrass - 130 hectares

CORALS

Researchers identified 163 species of corals in 14 families and reported that almost all eight sampling stations had “good coral cover” (Table 6.2). The size of coral reef areas ranged from 6 hectares at Shark’s Point to 150 hectares at Capsalay Island. Overall cover of live hard coral was placed at 52%, with the Boayan Island station recording the highest total coral cover (71%). The greatest number of species was found in Albaguen, which had 88 different kinds of corals. Unfortunately, in August 1998, a coral bleaching event, which raised water temperature to 34^0C, has killed a sizeable portion of living corals in San Vicente (Box 6.1, Table 6.3).

Table 6.2. Characteristics of coral reefs in San Vicente (SUML 1996).

STATIONS	CORAL REEF AREA	REEF FLAT EXTENT (WIDTH)	SLOPE	SUBSTRATE	REMARKS
Boayan Island	Boayan Island	100 m from the shoreline to the reef crest	60º - 70º at 10 m deep	sand, rubble, rock	good coral cover
Albaguen Island	85 ha	-	-	sand, rubble, rock	wide patches of corals surrounded by sandy area; good coral cover
Manta Ray Reef, Capsalay Island	150 ha	200 m from the shoreline to the reef crest	40º - 45º at 10 m deep	sand, rubble, rock	good coral cover; branching and tabulate *Acropora* were dominant; *Pocillopora damicornis* and branching *Montipora digitata* common in the shallow area and foliose *Montipora* in the deep
Imuruan Island	100 ha	300-m wide reef flat connecting the shores of Imuruan and Lampinigan Is. 150 m from the	10º	sand, rubble, rock	soft corals (*Sarcophyton*), tabulate *Acropora* and massive *Porites* were common
Capari, Poblacion		shoreline 150 m from the	15º - 20º at 10 m deep	sand, rubble, silt, rock	beyond 8 m deep, area is silty/ sandy with sparse patches of corals; high cover of live and fragmented branching *Acropora* in the shallow station boulders with coral recruits
Catalat Island		shoreline, coral reef width is 30 m from the *Sargassum* bed at 5 m deep 75-100 m from	30º	mostly rock; sand, rubble	found within 5-12 m deep; beyond 12 m deep, substrate primarily sandy; *Sargassum* bed in shallow area soft corals abundant
Shark Point, Port Barton	6 ha	the rock outcrop 200 m from the	30º	mostly rock; sand, rubble	 beyond 10 m deep, area
Baybay Daraga, Port Barton	50 ha	shoreline	15º - 30º	sand, rubble, silt, rock	sandy/silty with patches of corals; numerous coral recruits

SEAGRASS

Eight seagrass species in 6 genera were recorded, occupying an estimated area of 225 hectares (Table 6.4). Capsalay Island in Port Barton had the most diverse collection of seagrass, but the highest seagrass cover was recorded in Poblacion proper and Queen's Bay.

ALGAE

Surveys of the islands of Catalat and Boayan, as well as the shores of Gawid, yielded 96 species of algae in 55 genera. *Sargassum* was the most abundant species (Table

Box 6.1. Results of a coral reef survey in Port Barton.

In September 1998, several researchers from the PCSD and CRMP surveyed four reef sites in Port Barton. The survey coincided with a warm water bleaching event which was occurring all over the southern Philippines at the time.

Benthic results. Live hard coral cover ranged from 15% to 33.8%. This low figure can in part be explained by the large proportion of bleached coral that was recorded in the "other" category. There was large-scale degradation at all sites resulting from anchor damage, and the past use of destructive fishing, such as blast or cyanide fishing. The best site in terms of live hard coral cover was Site 1 (Manta Ray Reef); by far the worst was Site 3 (Albaguen Island), which had only 15% coral cover and this was heavily degraded. Albaguen Sanctuary also revealed the second highest incidence of dead coral, the highest being at Paraiso Reef. Excessive bleaching was a major concern – this was recorded at all sites to a high degree. All sites can be classed in the "poor to fair" category for live hard coral cover.

Fish indicator species. Fish indicator species were used to assess the level of overfishing and the targeting of certain species, such as grouper, humphead wrasse, bumphead parrotfish and Barramundi cod. No target species was recorded indicating high exploitation levels. Butterflyfish are commonly used as an indicator species of reef health. At all sites, only butterflyfish were recorded along the transect for indicator species assessment. Sites 2 and 4 had the highest number of butterflyfish, which corresponds with the sites' high live coral cover. No other indicator species except butterflyfish were recorded for the whole transect.

Descriptions of the four sites and the results follow.

Site 1. Manta Ray Reef

High temperatures (34°C) were recorded at 3m and 10m, even higher than at surface (31°C). Visibility was 8-10m. This reef is sheltered but it is unknown whether there have been storms that caused coral damage in recent years. Anthropogenic impacts were assessed as "moderate."

Benthic results. Despite massive bleaching at the whole site, Manta Ray Reef appeared to have the highest percentage of live hard coral along transect. Most bleaching was in shallow areas. Dead coral accounted for 23.13%.

Site 2. Paraiso Reef also known as Heinz Reef

Water was very warm. This is an exposed patch reef, close to Albaguen Island, of around 40m across and covering 12 hectares. There was evidence of past destructive fishing (blast and possibly *muro ami* and cyanide).

Benthic results. Live coral cover was recorded at 30.6%. The incidence of bleaching was recorded at 19.3%. Dead coral cover accounted for 31.9%.

Site 3. Albaguen Island near settlement

This is a fringing reef less than 100m from shore. This site is heavily degraded, with large amounts of *Sargassum* on the back reef. Silt was recorded settling on corals and some bleaching of anemones was noted.

Benthic results. This site had the lowest recorded live coral cover at only 15%. High growth of *Sargassum* and *Padina* was noted at 24.38% and 8.13%, respectively. Dead coral accounted for 13.8% but rubble (largely from blast fishing) was high at 13.1%.

Site 4. Albaguen Island proposed Sanctuary

This fringing reef lies 90m from shore with a steep drop-off at 60° to 30m. Coral was noted on the upper 10m only. Damage (blast scars, rubble and anchor damage) appeared quite old. Two spear fishers were sighted during survey. The reef has many fish, and the fish are relatively large (the area appears to have the highest diversity among the sites surveyed). Good site for a sanctuary.

Benthic results. This area had the second highest coral cover (33.1%) and the highest incidence of coral bleaching (25%). It also had the second highest cover of dead hard coral (27.5%).

Source: Curran and Comer 1998

Table 6.3. Summary of benthic assessments (percentage of frequency cover) of four sites in Port Barton (Curran and Comer 1998).

BENTHIC CATEGORY	MANTA RAY REEF SITE 1	PARAISO REEF SITE 2	ALBAGUEN (NEAR SETTLEMENT) SITE 3	ALBAGUEN (PROPER & SANCTUARY) SITE 4
Hard coral	33.7	30.8	15.1	33.2
Soft coral*	-	-	-	-
Dead coral	23.5	31.9	13.7	27.5
Fleshy seaweed	-	-	24.4	0.6
Sponge	1.0	0.6	5.0	0.6
Rock	3.7	4.4	6.9	6.9
Rubble	12.5	7.5	13.1	5.0
Sand	13.7	2.5	8.1	-
Silt/clay	-	-	-	-
Others	2.5	1.0	8.1	0.6
Coral bleaching	7.5	19.4	5.6	25.0
Black band disease	1.9	1.9	-	0.6

* all soft corals were bleached and recorded in the bleached category

Table 6.4. Extent of seagrass and algae in San Vicente (SUML 1996).

SITE	VEGETATION	EXTENT
Primary Data		
Boayan Island	seagrass	0.23 hectare
	foliose algae	0.04 hectare
Albaguen Island	*Sargassum*	50 square meters
	foliose algae	0.4 hectare
Exotic Island	*Sargassum*	0.225 hectare
Poblacion Proper	seagrass	100 hectares
Imuruan Island	coralline articulated algae	5 square meters
Capari	*Sargassum*	0.695 hectare
Catalat Island and vicinity	*Sargassum*	5.4 hectares
Gawid	*Sargassum*	5.1 hectares
Queen's Bay	seagrass	2.0 hectares
Capsalay	foliose algae and *Sargassum*	1.0 hectare
	seagrass	0.35 hectare
Secondary Data (Interview)		
Binga	seagrass	50 hectares
Port Barton	seagrass	70 hectares
Caruray	seagrass	50 hectares
Poblacion	seagrass	45 hectares
New Villafria	seagrass	10 hectares

Table 6.5. Benthic substrate cover (%) in San Vicente (SUML 1996).

STATIONS	CORALS			FLORA		OTHER FAUNA	ABIOTIC			
	Live Hard Coral	Soft Coral	Dead Coral	Algae	Seagrass		Rubble	Sand	Silt	Rock
Boayan Island	71.25	-	8.13	0.94	0.94	3.75	0.63	1.88	-	12.50
Albaguen	63.13	-	5.00	0.63	-	10.00	3.13	4.38	-	13.75
Capsalay	69.06	-	10.00	1.25	-	2.81	10.63	2.50	-	3.75
Imuruan	43.44	17.34	1.56	1.25	-	1.72	19.06	3.13	-	12.50
Capari	54.38	12.50	15.63	0.94	-	0.16	3.13	-	3.59	9.69
Catalat	24.06	0.47	6.56	31.25	-	0.94	1.88	4.53	-	30.31
Shark Point	43.75	24.69	-	11.88	-	1.56	-	5.47	-	12.66
Baybay Daraga	49.84	0.47	-	21.30	-	0.16	-	3.07	12.60	12.55
MEAN	**52.36**	**6.93**	**5.86**	**8.68**	**0.12**	**2.64**	**4.80**	**3.12**	**2.02**	**13.46**

6.4). Areas with the highest number of algae species were Catalat, Boayan Island, and Gawid.

SUBSTRATE

The type of vegetation is generally determined by the substrate, or the composition of the sea bottom. Seagrass is usually found on sand and silt, while *Sargassum* (brown seaweed) is abundant on limestone or dead coral. The dominant substrate in the nearshore areas of San Vicente is sand. Other substrates observed were silt, rubble, and limestone (Table 6.5).

MANGROVES

Researchers counted 22 species of mangrove covering an area of 142 hectares in San Vicente. Old Site in Caruray had the highest number of species among 19 sites surveyed. *Busaing* (*Bruguiera gymnorrhiza*) and *bakhaw-laki* (*Rhizophora apiculata*) were the most common species found in mangrove forests, where the consistency of the soil ranged from very coarse to very fine sand. Overall density of seedlings and mature trees was low due to the thick canopy of the vegetation. The greatest number of seedlings was recorded in Tagbalisong, for the *Busaing* mangrove species.

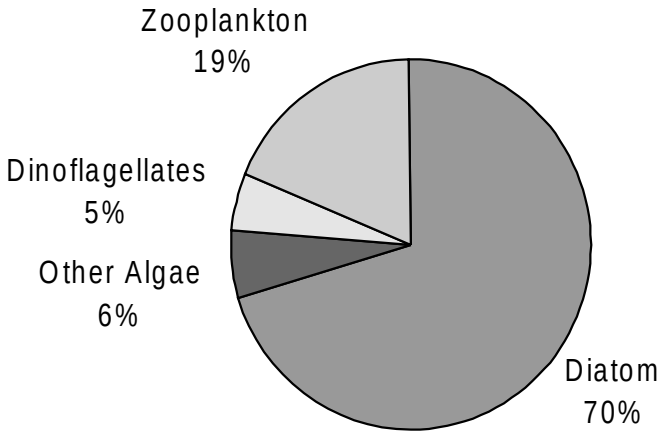


Figure 6.3. Plankton distribution in San Vicente (SUML 1996).

PLANKTON

Seventy-one percent of the plankton community sampled were diatoms, with 69 genera recorded (Figure 6.3). The dinoflagellate group was composed of 55 species in 20 genera. There were also 37 groups of zooplankton recorded. Shrimp larvae were common. High densities of fish larvae and eggs were recorded in Catalat and Poblacion.

PCRA RESULTS

Splashes of red on most of the barangay maps produced in the PCRA show that coral reefs abound in the waters of San Vicente. Seagrass and mangroves are also found in many of the villages. During the habitat assessment sessions of the PCRA, the fishers were asked to evaluate and rate four habitats: beaches, seagrass, mangroves, and coral reefs. Later, volunteers accompanied the PCRA team in validating their assessment of coral reefs through snorkel surveys in 29 sites.

A summary of the fishers' evaluation is contained in Table 6.7. In the first six sites, the assessment of habitats was not systematically done. This explains why some entries say "not assessed." In the last site, the extensive coral reefs were too far away to be surveyed. The table also shows the findings of the snorkel survey of the coral reefs (last column).

Details of the PCRA habitat assessment for coral reefs, showing the percentages of various components of the substrate as well as the coral cover, are shown in Table 6.8.

During the resource mapping session of the PCRA, local fishers identified the

Table 6.6. Mangrove communities in San Vicente (SUML 1996).

SITE	AREA (has)	REMARKS
San Isidro, Port Barton	1	Mangroves in patches.
Pagdanan, Port Barton	5	Dominated by *R. mucronata* on the seaward side.
Isla Belasco	3	Mangroves seaward a mixture of *R. mucronata* and *R. apiculata*. Landward, *H. littoralis* and *B. gymnorrhiza* most common.
Pamoayan,Port Barton	10	*R. apiculata* common.
Darapiton river, Port Barton	100	A zone of *B. gymnorrhiza*, *C. tagal* and *R. mucronata* found at the river mouth. Inland, a zone of *X. moluccensis* (and monkeys) observed.
Bunuanginan, Port Barton	10	*R. apiculata* the most common species seaward.
Villapeña, Port Barton	10	*R. apiculata* the dominant species.
Bigaho, Port Barton	1	*B. gymnorrhiza* dominate.
Cata River, Port Barton	30	Mangroves cut for charcoal production.
Dapi, Port Barton	50	Landward *R. apiculata* dominated landward and *R. mucronata* dominated seaward.
Pob. San Vicente	2	Mangroves planted adjacent to the market and near a fishpond.
Alimanguhan, San Vicente	5	Only two species, *R. apiculata* and *B. gymnorrhiza*, with the latter being dominant.
Pulangbato, San Vicente	2.5	*R. mucronata* dominant. A wild dove, locally known as *"balud"* observed.
Nagbalisong, Port Barton	10	Only *R. apiculata* and *B. gymnorrhiza* observed.
Cayduros	.5	*R. apiculata* dominant.
Old/New Caruray	150	Patches of *R. apiculata*, *B. gymnorrhiza*, *C. tagal* were observed in between stations. *Nypa* lined the river banks. *A. ilicifolius* found on the right bank of the deltas. Mangroves not as thick as those in the Old and New site
Decala, Caruray	100	of Caruray. *Sonneratia* dominant at the river mouth. At mid-river, patches of *B. gymnorrhiza* observed. Mangroves in patches along the river. Bangus fry
Kemdeng Villafria	2	collection at the river mouth.
Binga	9	
TOTAL	**501**	

most abundant and most commercially valuable resources found in the waters near their communities. Due to space constraints, only the top 10 finfishes are shown for each village visited by the PCRA team. Figure 2.3 shows the resources identified by the fishers of San Vicente as the most important to their livelihood. These resources are among the items plotted on the maps found in Chapter 4.

Another way of presenting the resources found in San Vicente, is through the use of transect diagrams. Figure 6.4 shows the results of that activity in relation to resources found in each habitat. It is important to note that the presence of a particular resource (e.g. dolphins, turtles) in the list does not necessarily mean that the fishers

catch these animals. The basic criteria for this list are the abundance of certain resources in the locality and the commercial importance of these resources to fishers. The list is not exhaustive, but it is a good reflection of the fishers' perception of their marine environment. The transect diagram is a helpful tool in managing resources according to habitat. By studying this diagram, coastal managers can easily determine which places are overfished and thus focus their efforts on controlling the exploitation of resources in these ecosystems.

Table 6.7. Results of the habitat assessment in San Vicente, PCRA 1997.

SITE	BEACHES	SEAGRASS	MANGROVE	CORAL REEF	MEAN PERCENT TOTAL COVER (%) LIVE CORAL
Pinagmalucan	good	NA	-	NA	26.8
Panindigan	good	NA	-	NA	36.3
Macatumbalen	good	good	good	NA	33.6
Daplak	fair	fair	-	NA	33.0
Casoyan	good	good	NA	NA	27.0
Pulang Bato	NA	NA	NA	NA	42.3
Catalat	fair	fair	-	fair	25.8
Sta. Cruz	fair	good	good	fair	31.5
Gawid	good	good	good	good	33.0
Decala	poor	-	good	-	-
Old Caruray	fair	fair	good	good	67.3
Barongbong	good	good	-	good	68.0
Albaguen	good	good	-	good	55.0
Pagdanan (Queen's Bay)	fair	fair	good	good	54.0
Capsalay	good	good	good	good	53.0
Port Barton					
(Poblacion)	excellentgood	good	good	62.5	
Pamoayan	fair	fair	good	fair	27.5
Naonao/Bigaho	fair	fair	good	fair	44.3
Baybay Daraga	good	good	-	fair	32.3
New Villafria	fair (due to mining)	fair	fair	fair	36.0
New Agutaya	excellent-	good	good	59.6	
San Isidro	excellent-	-	fair	34.4	
Sto. Niño	excellent-	-	fair	42.0	
New Canipo	good	-	good	good	28.0
Imuruan	good	-	-	good	31.5
Binga/Buding	good	excellentgood	good	33.0	
Wedge Island	-	-	-	fair	44.5
Cauban	good	-	good	fair	78.0
Alimanguan	excellent-	good	low	NA	

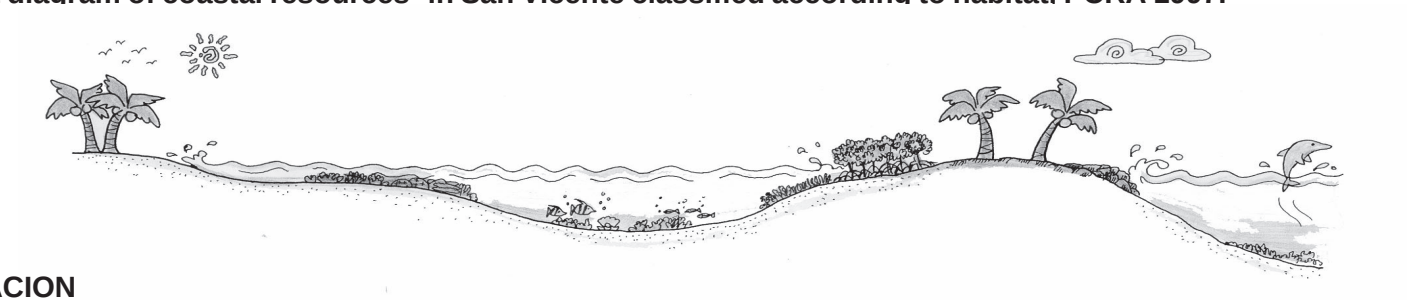
NA - not assessed

Table 6.8. Assessment of coral reefs in San Vicente, PCRA 1997.

BARANGAY/SITIO	NUMBER OF OBSERVERS	TOTAL DEAD SUBSTRATE	HARD CORAL	SOFT CORAL
Poblacion				
Pinagmalucan	4	73.2	23.3	3.5
Panindigan	3	63.7	36.3	0.0
Poblacion	5	66.4	33.6	0.0
Daplac	3	67.0	32.0	1.0
Casoyan	2	73.0	24.0	3.0
Pulang Bato	3	57.7	23.5	18.8
Caruray				
Catalat Island	3	84.2	14.0	1.8
Sta. Cruz	2	68.5	26.5	5.0
Gawid	2	67.0	24.3	9.0
Old Caruray		32.7	15.6	51.7
Port Barton				
Barongbong	3	31.9	27.3	40.7
Albaguen Island	3	45.0	51.0	4.0
Queen's Bay	2	45.0	31.5	23.5
Capsalay Island	2	47.0	51.5	1.5
Port Barton Proper	2	37.5	35.5	27.0
Pamuayan	2	72.5	22.0	5.5
Naonao/Bigaho	3	55.6	33.7	10.6
Baybay Daraga	3	67.6	30.3	2.0
New Villafria	3	64.0	17.7	18.3
New Agutaya	3	40.4	24.3	35.3
San Isidro	3	65.6	8.7	25.7
Sto. Niño	1	58.0	6.0	36.0
New Canipo	1	72.0	4.0	24.0
Binga				
Imuruan Island	2	68.5	22.0	9.5
Binga Proper	1	67.0	15.0	18.0
Wedge Island	2	55.5	21.0	23.5
Cauban	1	22.0	22.0	56.0
Alimanguhan	NA			

NA - not assessed

Figure 6.4. Transect diagram of coastal resources* in San Vicente classified according to habitat, PCRA 1997.



BARANGAY POBLACION

SITE	BEACH	INSHORE FLAT	LAGOON/ BAY	OFFSHORE CORAL REEF	ISLAND/ MANGROVE	DEEP OCEAN
Pinagmalucan	liswi, sikad-sikad, halaan, tagitis, kanaway	shells, seaweeds, balatan, alimasag, pugita, isdang-bato	bangus fry, alamang, sugpo, alimasag, balatan, dilis, pusit bahura, pagi, sapsap	tauban, pugita, maya-maya, danggit, lapu-lapu, taklobo, sanang	___	pusit laot, burao, kalapato, besugo, salayginto, tulingan, salmollete
Panindigan	tagitis, pebbles	shell, danggit, alimasag	mulmol, danggit, katambak, liswi, taklobo, pugita	lapu-lapu, kanuping, mulmol, pusit bahura, taklobo, pugita, kolambutan, banagan pusit, kanuping,	*Island:* sandy beach	torsillo, pusit laot, tangigue, maya-maya, kalapato, alumahan, tabagak, dilis
Macatumbalen	bagasay, tagitis, punaw	budyong, alimasag, pugita, alimango, isda, suso, hipon, tipay, liswi, tarab, lato, balatan, banagan, seahorse	kanuping, danggit, haus-haus, palata, palad, mulmol, pagi, pating	talakitok, kalapato, danggit, pagi, pating, alimasag, banagan, sapsap pawikan, suno,	*Mangrove:* alimango, talaba, tamilok	bisugo, sapsap, tulingan, tangigue, kalaso, maya-maya, tursilyo, pating
Daplac	bogitis, balingsara, agokoy, sihi	liswi, kasag, sa-ang, sihi, samong, taklobo, lato, guso, isdang gagmay, sikad-sikad	taklobo, matambaka, burao, pugita, tauban, banagan, alimasag, mamsa	pagi, lapu-lapu, mulmol, kanuping, tangigue, danggit lapu-lapu, lawian, dalagang-bukid,	___	tauban, pusit kalapato, lumba-lumba, galung-gong, sulid, maya-maya, rompi pating, lapu-lapu
Kasuyan	tagitis, bagasay	sihi, kasag, lato, lapas, balatan	taklobo, liswi, saliot, mulmol, danggit, lato, banak	pugita, samong, suwahan	*Isla Manok:* samong, sihi, sisi, payong-payong, tanakogon	mamsa, tangigue maya-maya, sagisi, suso, dalagang-bukid, anay-anay, kalapato, galunggong

BARANGAY CARURAY

SITE	BEACH	INSHORE FLAT	LAGOON/ BAY	OFFSHORE CORAL REEF	ISLAND/ MANGROVE	DEEP OCEAN
Catalat	bogitis, sihi, lapas	sa-ang, liswi, lato, kasag	pugita, pusit, banagan, lapu-lapu, kanuping, tauban, pawikan, mulmol	maya-maya, sagisi, sulid, dalagang-bukid, olpot, kalamuhoy	*(Catalat is an island)*	lapu-lapu, sagisi, banagan, pating, lipti
Sta. Cruz	silica sand, itlog ng pawikan, shells	alimasag, pugita, laot, sihi, sa-ang, liswi, bulatok, bangus fry	sapsap, bisugo, burao, pusit, tamban, kalapato, talakitok, hasa-hasa, pugita, lambay	danggit, kanuping, banagan, lapu-lapu, mulmol, pusit bahura, pugita pugita, tauban,	___	tangigue, tulingan, mamsa
Gawid	saroksarok, lapas, sisi	taktakon, sa-ang, alimasag, liswi, kapinan	pugita, kanuping, danggit, sulid, bisugo, mulmol	isdang bato, balatan, banagan _____	*Isla Garcia:* danggit, sulid, pugita, tauban	maya-maya, sagisi, ulpot, kalamuhoy, maya-maya, suno, mamsa, talakitok,
Decala	alimango, hipon, alimasag	kibaw, punaw, talaba, tamilok	bisugo, banak, pusit, sapsap, espada, tamban, lapu-lapu	lapu-lapu,	___	lapu-lapu, suno, maya-maya
Old Site Caruray	punaw, kaykay	sihi, balatan, lato, sa-ang, alimasag, samong	danggit, banak, liwit, mulmol, karaho, basa, banagan, taklobo	kanuping, tauban, pagi, mulmol, pakol, pusit, pawikan, taklobo, pating	*Isla Garcia:* sihi, pusit, lumban, banagan, pugita, banak, mulmol, danggit *Mangrove:* uway, nipa alimango, tamilok, pagi hipon	sagisi, lapu-lapu, pakol, pusit, samong, kalapato, tangigue

BARANGAY PORT BARTON

SITE	BEACH	INSHORE FLAT	LAGOON/ BAY	OFFSHORE CORAL REEF	ISLAND/ MANGROVE	DEEP OCEAN
Barongbong	tagitis, sihi, lapas, takurog, taktakin	lato, sisi, liswi, sa-ang	taklobo, kuya, suno, danggit, kanuping, dalagang-bukid	pusit bahura, tauban, banagan, suno, mulmol	___	maya-maya, suno, olpot, tursilyo, mamsa, tangigue, tambakol
Albaguen	liswi, dagatan na taklobo	sihi, kuya, lapas, sa-ang, samong, tacurong, balingkahoy, lukob-lukob	bisugo, suno, kanuping, bangsi, alumahan, tulingan, galunggong	maya-maya, lapu-lapu, dalagang-bukid, sagisi, kalapato, salimburao, tulingan, tangigue	*(Albaguen is an island)*	lapu-lapu, maya-maya, sagisi, dalagang-bukid
Pagdanan	___ *(Houses on stilts in water)*	lato, liswi	bisugo, dilis, sapsap, pawikan	lapu-lapu, pusit, burao, danggit, maya-maya, taklobo, liswi, tauban	*Velasco:* lapu-lapu, burao, kalapato	tangigue, tulingan, dolphin
Capsalay	___	mulmol, lato, kanuping, lumban, tarab, seagrass	liwit, hasa-hasa, balo, dalagang-bukid, dolphins	sapsap, liswi, mulmol, danggit, tauban, pusit, lapu-lapu, taklobo, pawikan	*(Capsalay is an island)*	pusit
Port Barton (Poblacion)	balas, bato	banak, dilis, liswi, hipon, samong, alimasag	sapsap, liwit, pitik, dolphin, matambaka, tambakol, ibon dagat	balo, pak-an, tarab, pusit, pugita, tipay, banagan, tauban, dalagang-bukid, samong, taklobo	*Mangrove:* ahas dagat, alimango	*Fishers rarely go to deep waters.*
Pamoayan	pawikan (nesting area), sihi, alimasag	danggit, banak, dilis, liswi, sa-ang	sapsap, bisugo, espada, pak-an, salmollete, tarab, dolphin	kanuping, bakoko, pusit, tauban	*Mangrove:* ahas dagat, alimango, hipon, kahoy	pusit

Naonao & Bigaho	silica sand	banak, balatan, ahas dagat, liswi, sihi	bisugo, hipon, pakan, tanguige, tulingan, alimasag, danggit, matambaka	pawikan, tauban, alimasag, banagan, pitik, saang, taklobo, tarab, lapas	*Mangrove:* alimango, talaba	tulingan, hasa-hasa
Baybay Daraga	silica sand	talaba, liswi	tanguige, maya-maya, bisugo, dalagang-bukid, balo, danggit	pugita, pusit, tauban, taklobo, kanuping, pawikan	_____	dolphin, tulingan

BARANGAY NEW VILLAFRIA

SITE	BEACH		LAGOON/ BAY	OFFSHORE CORAL REEF	ISLAND/ MANGROVE	DEEP OCEAN
New Villafria (barangay proper)	silica sand	banak, liswi, talaba, tarab, alimasag, hipon	kanuping, dalagang bukid, hilo, ibon-dagat, talakitok, mangagat	lapu-lapu, lato, balo, danggit, pawikan, pugita, pusit, sihi, mulmol	*Mangrove:* alimango, nipa, kahoy	ahas dagat, pitik

BARANGAY NEW AGUTAYA

SITE	BEACH	INSHORE FLAT	LAGOON/ BAY	OFFSHORE CORAL REEF	ISLAND/ MANGROVE	DEEP OCEAN
New Agutaya (Bukana)	pawikan nesting site, silica sand, talabong	dilis, lapad, asohos, bangus fry, alimasag	tulingan, burao, pusit, dolphins, ahas dagat	matambaka, galunggong, pitik, tauban	*Mangrove:* mangagat, bangus fry, lapu-lapu fry, hipon, kahoy, alimango	tauban

BARANGAY SAN ISIDRO

SITE	BEACH	INSHORE FLAT	LAGOON/ BAY	OFFSHORE CORAL REEF	ISLAND/ MANGROVE	DEEP OCEAN
San Isidro (Bokbok)	pawikan nesting site, bato, lawin, talaba	pusit	burao, tanguige, turay (tamban family)	darag-darag, kanuping, lapu-lapu, tauban, pugita	*Mangrove river:* alimango, wild ducks	salay-salay, bisugo, karaho, dolphin, pusit

BARANGAY STO. NIÑO

SITE	BEACH	INSHORE FLAT	LAGOON/ BAY	OFFSHORE CORAL REEF	ISLAND/ MANGROVE	DEEP OCEAN
Sto. Niño (Mangingisda)	pawikan nesting site, bangus fry, alimasag, sihi, nipa	_____	burao, pusit, bisugo, ibon dagat, sa-ang, talakitok, sapsap, asohos, espada, dolphin, sea snakes, dugong	danggit, lato, kanuping, pawikan, agahon (maya-maya family), sulid, tauban, pugita, alimango	_____	pusit, pitik

BARANGAY NEW CANIPO

SITE	BEACH	INSHORE FLAT	LAGOON/ BAY	OFFSHORE CORAL REEF	ISLAND/ MANGROVE	DEEP OCEAN
New Canipo (barangay proper)	pawikan nesting site, sihi, punaw, sea birds	dilis, banak, asohos, balo, alimasag, bangus fry	bisugo, pusit, sapsap, liswi, salayginto, dugong, dolphin	kanuping, burao, lato, pawikan, banagan, tauban, pugita	*Mangrove:* bangus fry, nipa	tauban, pitik, pusit

BARANGAY BINGA

SITE	BEACH	INSHORE FLAT	LAGOON/ BAY	OFFSHORE CORAL REEF	ISLAND/ MANGROVE	DEEP
Imuruan	pawikan nesting site, liswi, sihi, lumban	___	bisugo, talakitok, pusit, pagi, kalapato, sapsap, liswi, matambaka, kanuping	mulmol, danggit, tauban, banagan, pawikan, taklobo, sulid	*(Imuruan is an island.)*	galunggong, dolphin, whale, pusit, pitik, sea snakes
Binga (barangay proper & Boding)	pawikan nesting site, sihi, lapas, punaw, sand pebbles, sea birds	lato, sapsap	bisugo, dilis, maya-maya, dolphin (Feb-May), burao, pusit, alimasag, pitik, talakitok, kanuping burao, pusit, maya-	lapu-lapu, danggit, pawikan, sea snakes, sulid, pusit, tauban, pugita, liswi, banagan, balatan,	*Mangrove:* nipa, alimango, bangus fry, bakhaw	___ *(Fishers don't usually go to deep waters.)*
Cauban	pawikan nesting site, sihi, lapas	dilis, pagi, pugita, samong (during habagat)	maya, kalapato, sapsap, liswi, bisugo, talakitok, tanguige	danggit, pawikan, lumban	*Mangrove:* bangus fry *Wedge Island:* danggit, taklobo, sea birds	dolphin, sea snakes, pusit, pitik

BARANGAY ALIMANGUAN

SITE	BEACH	INSHORE FLAT	LAGOON/ BAY	OFFSHORE CORAL REEF	ISLAND/ MANGROVE	DEEP OCEAN
Alimanguan (Purok I)	pawikan nesting site, silica sand	sapsap, dilis, samong, liswi, alimasag, bangus fry	bisugo, pusit, tanguige, balatan, pawikan, pitik, birds, taklobo, pagi, burao, tulingan, dolphin	pugita, banagan, kalapato, kanuping, agahon, talakitok, sea snakes, tauban		whale (month of November)

* See List of Terms in the beginning section for the English names of these resources.

Chapter 7
THINGS PEOPLE DO WITH FISHES AND BEACHES
(Coastal Resource Uses)

With nearly half of San Vicente's population dependent on fishing as their main source of income, everyone agrees it is important to sustain the productivity of marine resources. A survey conducted in August 1996 by the International Marinelife Alliance-Philippines painted the following profile of San Vicente's fishing industry:

MARKETING OF FISH CATCH: Groupers classified as "good size" are usually shipped abroad, where there is a high demand for this particular species of food fish. The majority of San Vicente's fish catch is shipped to Liminangcong for transport by boat to Navotas, El Nido, and Puerto Princesa.

MOST COMMONLY USED FISHING METHODS: hook and line, gill net, gleaning, haul seine, purse seine, spearfishing, fish corral.

FISHING SEASON: The peak season is from May to July while the lean season is from November to January. On the average, fishers go fishing 20 days a month.

DESTRUCTIVE FISHING: In the late 1980s, compressor fishing was practiced in 6 barangays; in 1996, only 2 barangays (Sto. Nino and Catalat in Caruray) were known to still use the method.

According to former members of Bantay Palawan, the environmental protection agency of the provincial government, 10% of fishers in San Vicente still use the banned substance sodium cyanide, usually during the northeastern monsoon from November to March. Migrant fishers from Cavite, Cebu, Lucena, Baler, Batangas and Mindoro

With nearly half of San Vicente's population dependent on fishing as their main income, everyone agrees it is important to sustain the productivity of marine resources.

provide sodium cyanide to San Vicente fishers, who sell their catch to the Cavite group of fishers. In Pagdanan, fishers use *lagtang* (plant-based poison) and sodium cyanide (provided by sources from Cuyo) in catching tuna. Fishers interviewed said the use of cyanide in the last 5 years destroyed reef fisheries in Panindigan, Boayan, Gawid, Caruray, and Lampinigan.

Most participants in the PCRA were hesitant to talk about illegal fishing methods, for obvious reasons. While they acknowledged that such methods persisted, there was general consensus that these had been minimized to a large extent by stricter laws and law enforcement.

In the barangay mapping sessions, subsistence or small-scale fishing emerged, as expected, as the biggest use for marine resources. Various kinds of nets and hook-and-line were the most common implements used for fishing (Figure 7.1).

After the mapping, participants were asked to make a transect diagram to show how the various habitats related to the way coastal resources were being used. They came up with a diagram showing the wide range of fishing gear and methods used in their municipality, not all of which they would admit using. Most of the destructive fishing practices (e.g. the use of sodium cyanide or dynamite), in particular, were attributed to outside fishers. On the whole, however, the participants were remarkably candid about the problems they faced, many of them expressing the hope that CRMP could help them solve these problems.

Most of the destructive fishing practices (e.g. the use of sodium cyanide or dynamite) were attributed to outside fishers.

The transect diagram shown in Figure 7.2 is an example of the tools used for CRM planning. It is easy to see from this diagram, for example, which areas are overfished and thus require stricter policies, such as open and closed seasons for fishing that would allow marine resources to recover.

The PCRA team found the diversity of the fishing gear used by local residents particularly noteworthy, especially for the historical insights some of the gear offered. Figure 7.3 shows a squid jigger used by the residents,

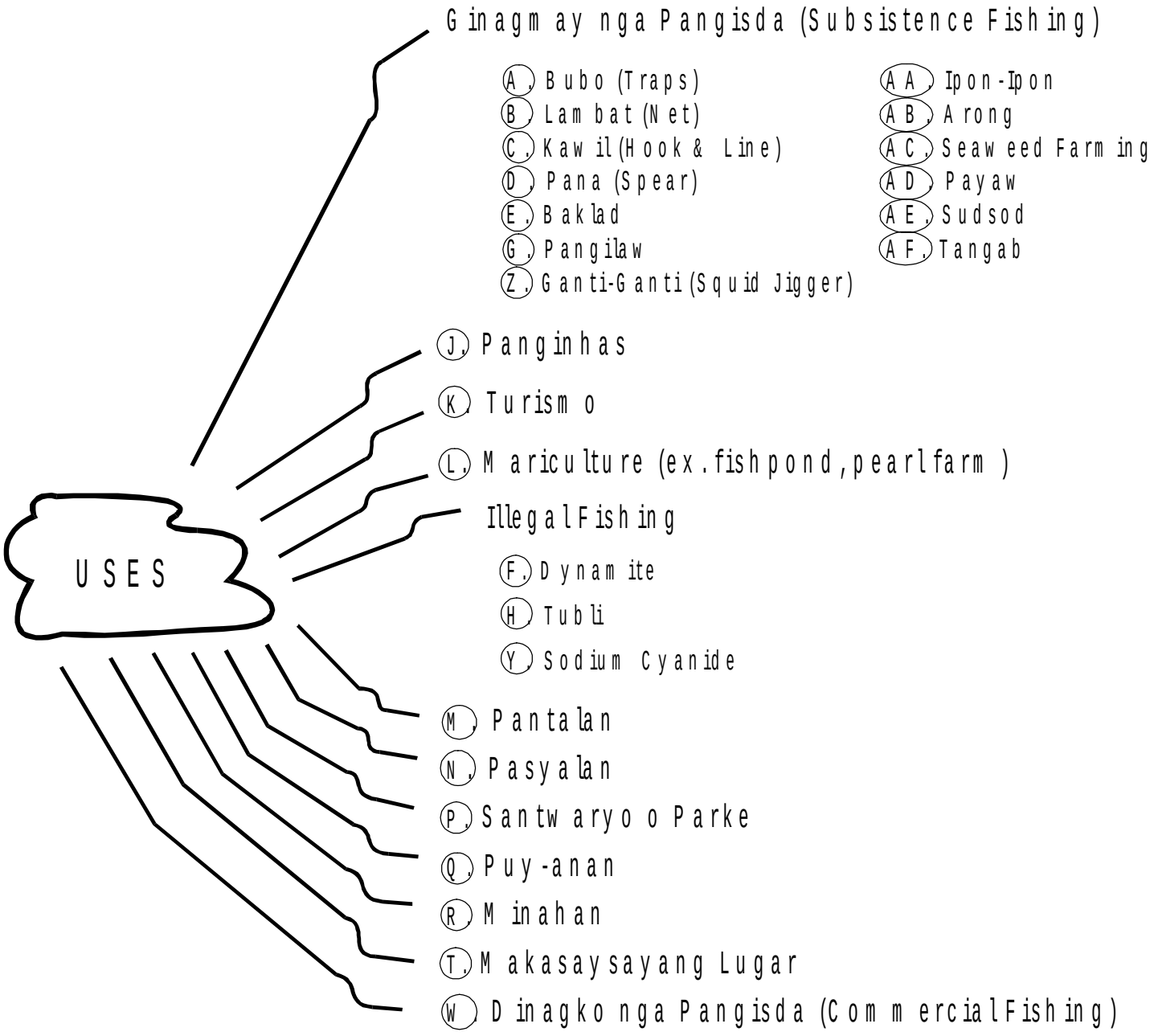
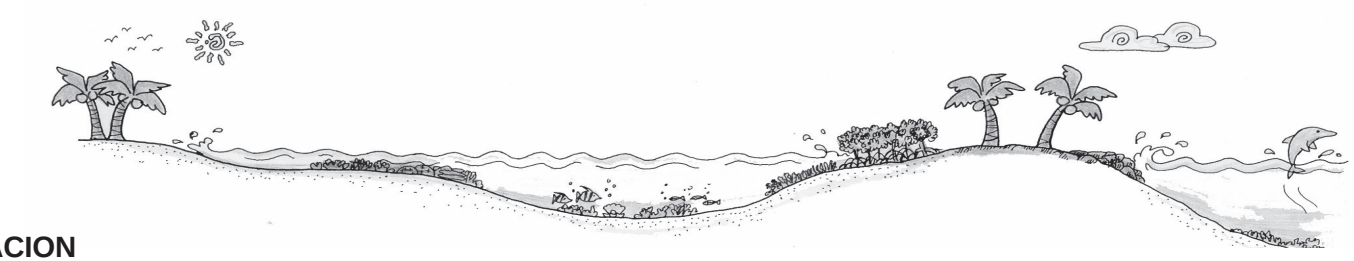


Figure 7.1. Resource uses identified by San Vicente fishers during mapping sessions, PCRA 1997.

Figure 7.2. Transect diagram of coastal resource uses in San Vicente classified according to habitat, PCRA 1997



BARANGAY POBLACION

SITE	BEACH	INSHORE FLAT	LAGOON/ BAY	OFFSHORE CORAL REEF	ISLAND/ MANGROVE	DEEP OCEAN
Pinagmalucan	pasyalan, meeting place, liguan, settlement, agriculture, drying area	panginhas, pangilaw, pana, bolo	hapa net, mosquito net, salap, gill net, skin diving pokot, pana, hook	spear fishing, hook & line, lambat	___	lambat, squid jigger, gill net, hook & line, bubo
Panindigan	handpick (screen for pebbles, turismo), ___ settlement, minahan	handpick, pana, pokot	& line lambat, kawil,	pokot, pana, kawil lambat, kawil,	*Island:* turismo	ganti-ganti, harrison, squid jigger, pokot, kawil
Macatumbalen	handpick (sometimes with feet & spoon also) ___ settlement	lambat, pangilaw, panginhas, tubli	baklad kawil, handpick (for	hipon-hipon (for squid) kawil, pana, pokot	*Mangrove:* pangilaw, handpick with ax	lambat, kawil
Daplac	handpick (sometimes with knife) ___ settlement	handpick, tubli	lobster) katian - ganso, pana, lambat handpick, bar,	kawil, lambat, pana, handpick,	___	kawil, lambat (paanod & palutang)
Kasuyan	handpick (with the aid of slippers and wood)	handpick (with the aid of bolo)	lambat, pana, kawil, pangilaw	katihan	handpick, kawil, lambat, hammer, bolo, ganso	undak, kawil, lambat

BARANGAY SAN ISIDRO

SITE	BEACH	INSHORE FLAT	LAGOON/ BAY	OFFSHORE CORAL REEF	ISLAND/ MANGROVE	DEEP OCEAN
San Isidro (Bokbok)	settlement, pasyalan	pangilaw, sudsod, panginhas, tangab, tubli	lambat, balingan	lambat, kawil	*Mangrove river:* bubo	pangilaw, lambat, hipon-hipon, arong, bungbong, sodium with compressor, balingan

BARANGAY STO. NIÑO

SITE	BEACH	INSHORE FLAT	LAGOON/ BAY	OFFSHORE CORAL REEF	ISLAND/ MANGROVE	DEEP OCEAN
Sto Niño (Mangingisda)	panginhas	tangab (for bangus fry)	lambat, kawil, pangilaw, arong (30 units)	kawil, pana, hipon-hipon, tubli	___	___

BARANGAY CARURAY

SITE	BEACH	INSHORE FLAT	LAGOON/ BAY	OFFSHORE CORAL REEF	ISLAND/ MANGROVE	DEEP OCEAN
Catalat	handpick, sundang (bolo)	handpick	bulalo, pana, hipon-hipon, kawil, lambat	kawil, lambat	*(Catalat is an island)*	kawil, nylon, lambat
Sta. Cruz	pamayanan, minahan ___ handpick with plate & coco shell	itak, salapang, handpick	lambat, kawil, pana lambat, kawil, timeng (trap made	pana, lambat, kawil	___	kawil, lambat, pamo (for dayo only)
Gawid	pamayanan ___ knife, lugit	handpick, bolo	of chickenwire) lambat, kawil, ilaw, lambat, kawil,	katian, pana, kawil ___	*Isla Garcia:* lambat, pana, kawil	kaskas (hook & line with chicken feathers)
Decala	bubo, lambat, pangilaw	gulok, kamay, paa, kamay, itak, pana,	pana, kamay, pangilaw	kawil, lambat,	___	kawil
Old Site Caruray	handpick ___ settlement	pangilaw		pana	*Isla Garcia:* kamay, ipon-ipon, pana, lambat, ganti-ganti, katian, pasyalan *Mangrove:* gulok, bubo, palakol, itak, sudsod	kawil, lambat

BARANGAY NEW VILLAFRIA

SITE	BEACH	INSHORE FLAT	LAGOON/ BAY	OFFSHORE CORAL REEF	ISLAND/ MANGROVE	DEEP OCEAN
New Villafria (barangay proper)	pantalan, pasyalan, pamayanan	hipon-hipon, panginhas	lambat, kawil, baklad	kawil, pana	___	___

BARANGAY NEW AGUTAYA

SITE	BEACH	INSHORE FLAT	LAGOON/ BAY	OFFSHORE CORAL REEF	ISLAND/ MANGROVE	DEEP OCEAN
New Agutaya (Bukana)	pamayanan, pasyalan, minahan	pangilaw, sudsod, tangab, salap (stationary net)	lambat, pangilaw, hipon-hipon, arong, squid jigger	kawil	*Mangrove:* pangilaw, fishpond, compressor (with cyanide)	___

BARANGAY NEW CANIPO

SITE	BEACH	INSHORE FLAT	LAGOON/ BAY	OFFSHORE CORAL REEF	ISLAND/ MANGROVE	DEEP OCEAN
New Canipo (barangay proper)	panginhas, pasyalan (waterfalls) pamayanan	pangilaw sudsod tangab	lambat arong, payao kawil squid jigger	kawil pana	___	pangilaw

BARANGAY BINGA

SITE	BEACH	INSHORE FLAT	LAGOON/ BAY	OFFSHORE CORAL REEF	ISLAND/ MANGROVE	DEEP OCEAN
Imuruan	panginhas turismo	___	lambat, kawil, arong, pangilaw hipon-hipon squid jigger	kawil, pana, sodium	marine sanctuary (4 hectares, 50 meters from shore)	kawil, pangilaw squid jigger
Binga (barangay proper & Boding)	pangilaw, turismo, pasyalan (lapus-lapus), pamayanan	pangilaw, panginhas tubli	bubo, lambat baklad, pangilaw, talakop, baling, kawil, squid jigger, arong (68 ass'n, 180 individual)	bubo, lambat, kawil, pana, hipon-hipon, pangilaw, cyanide	*Mangrove:* lambat, pangilaw sudsod, tangab ___ fishpond	payaw
Cauban	panginhas, pasyalan pamayanan, gathering pawikan eggs	panginhas	lambat, pana, pangilaw, cyanide, squid jigger, baklad, arong	lambat, kawil, pana, panginhas, cyanide	*Wedge I:* kawil, pana, pangilaw, panginhas dynamite, cyanide commercial fishing	pangilaw with squid jigger dynamite commercial fishing

BARANGAY PORT BARTON

SITE	BEACH	INSHORE FLAT	LAGOON/ BAY	OFFSHORE CORAL REEF	ISLAND/ MANGROVE	DEEP OCEAN
Barongbong	kamay, bolo	kamay, bolo	lambat, pana, kawil kawil, lambat	hipon-hipon kawil, lambat (pamosit)	___	kawil
Albaguen	kamay	bareta, itak martilyo (para sa kuya)	 lambat, kawil,	kawil, drift gill net (also called pamo, brand of thread)	*Albaguen is an island*	hook & line (kuskos, using chicken feathers)
Pagdanan	port settlement logging camp (before)	panginhas	pearl farm baling timeng, kawil,	pangilaw hipon-hipon		pangilaw arong payaw
Capsalay	turismo settlement pasyalan	pangilaw panginhas pana	lambat, hipon-hipon,	hipon-hipon kawil	*Mangrove:* hipon-hipon	kawil arong bubo
Port Barton (poblacion)	settlement, turismo, fishpond, kalsada	pangilaw panginhas	bubo, kawil,lambat, arong, payaw	kawil, pana turismo		
Pamoayan	turismo pamayanan	pangilaw, hipon-hipon, panginhas	baklad, lambat kawil, arong	lambat (with timbog)		squid jigger
Naonao & Bigaho	minahan, pantalan turismo, pamayanan	pangilaw panginhas	lambat, pana, baklad	kawil, hipon-hipon s. cyanide compressor		
Baybay Daraga	turismo	___	lambat, kawil, pana, hipon-hipon seabirds (as fishfinder)	kawil	___	

BARANGAY ALIMANGUAN

SITE	BEACH	INSHORE FLAT	LAGOON/ BAY	OFFSHORE CORAL REEF	ISLAND/ MANGROVE	DEEP OCEAN
Alimanguan (Purok I)	pasyalan pamayanan minahan	tangab panginhas	lambat pangilaw, arong squid jigger	kawil dynamite (by outside fishers)	___	lambat

the design of which was said to have been handed down over generations. Another gear called *pamo* took its name from the brand name of a thread used to construct it.

The group interviews yielded more information, such as the ownership of boats and fishing gear in each village. These are important considerations when planners need to decide the appropriate projects to implement in a particular village, or in the entire municipality. The results of the interviews are found in Table 7.1.

The graph in Figure 7.4 is based on calendar maps drawn by the fishers showing the months when they used certain gear (usually the most commonly used) in their village. This graph clearly shows the seasons when there is high fishing activity, for example, or when a fishing gear is heavily used. It thus provides a basis for regulating a fishing activity or a certain gear during a particular season.

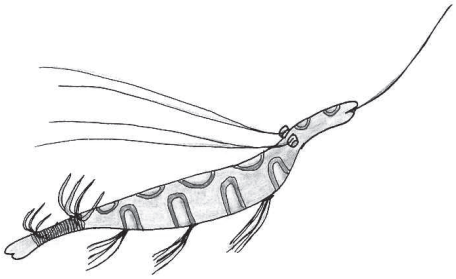
IT'S A WOMAN'S WORLD, TOO

Throughout this book, we use the word "fishers" and not the more popular term "fishermen". This is because San Vicente women, like most women in our coastal communities, are as economically active as the men in the fishing industry. In San Vicente, women have added reef gleaning and other fishery-related activities to their list of household chores and the usual responsibilities of child rearing. Gleaning for shells is a common sight along the shoreline especially during the southwest monsoon season, when the seas are too rough for fishing. It brings not only food for the table but extra cash as well.

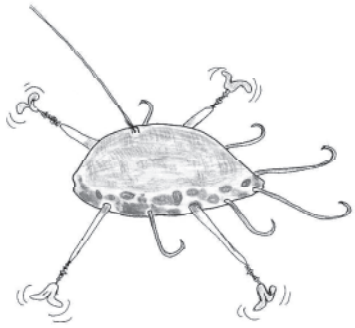
In San Vicente, women have added reef gleaning and other fishery-related activities to their list of household chores and the usual responsibilities of child rearing.

During the squid season, many women accompany their husbands to the sea. In the village of Baybay Daraga, there is a woman who is considered an expert in diving for octopus. Back on the shore, women usually take care of fish drying, vending, and trading. They plant cassava, banana, and sweet potato in their swidden farms during the lean fishing season. Where enough land and water are available, they plant vegetables for home consumption. In some villages, they weave mats and make nipa shingles for domestic use and as a means to earn extra income. They even work as hired hands during the rice harvesting season.

Table 7.2 shows the activities of women in the fisheries sector based on



Hipon-hipon **(Squid jigger used by residents)**



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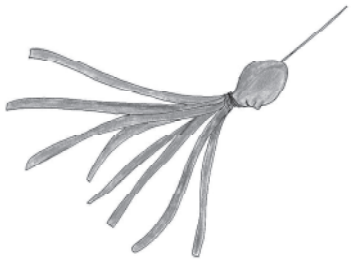
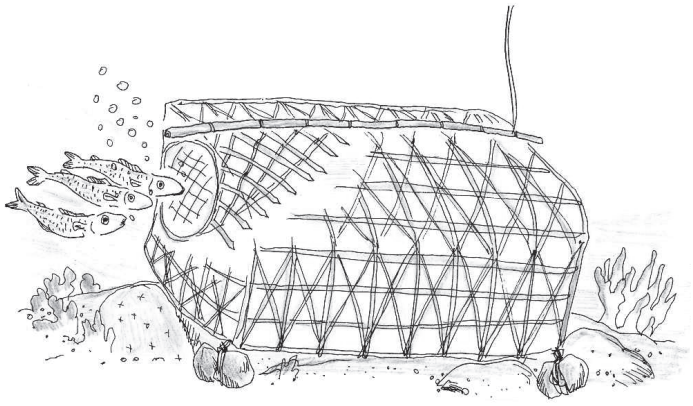


Katian

Ganso **(used for gleaning)**

Ganti-ganti **(squid jigger)**

Payao



Bubo **(bamboo trap)**

Figure 7.3. Types of fishing gear used by San Vicente fishers.

Table 7.1. Fishing households and ownership of fishing gear in San Vicente, PCRA 1997.

BARANGAY/ SITIO	TOTAL NUMBER OF HOUSEHOLDS	NUMBER OF FISHING HOUSEHOLDS	OWNERSHIP OF FISHING GEAR* (number of households)	OWNERSHIP OF BOATS** (number of households)	
Caruray					
Catalat Island	32	32	pangawil (32); hipon-hipon (32); ganti-ganti (32); pantihan-palubog (13); bondak-bondak (6); kitang-pamating (3); pamo (1) lambat-pamating (1)	17	15
Sta. Cruz	46	2[1]	pantihan-palubog (2); pangawil (4); pamana (4)	16[2]	8
Gawid	103	103	pangawil (100); pantihan-palubog (28); pamana sa pugita[x] (8); baklad (3); bubo sa alimango (1)	12	15
Decala	120	75	pangawil (20); pantihan-palubog (10); ganti-ganti (10); bubo sa alimango (2)	1	38
Old Caruray	105	45	lambat sa semilya ng bangus (20); pantihan-palubog (16); pangawil (10); bubo sa alimango (7); baling (2)	32	15
New Agutaya Bukana	13	13	pangawil (13); ganti-ganti (13); lambat-palubog (5); hipon-hipon (2); pamana (1)	8	1
Sto. Niño Purok 1	26	26	lambat-palubog (10); pangawil; ganti-ganti	7	14
Port Barton					
Barongbong	40	40	pantihan-palubog (31); hipon-hipon (21); pangawil (8); ganti-ganti (8); pamana (5); baling (1)	16	8
Albaguen Island	60	60	pangawil (60); ganti-ganti (60); pangugita (30); lambat-palubog (18); pamana (3)	26	16
Pagdanan (shore area only)	52	40	ganti-ganti (40); subid (10); kitang (10); lambat-palubog (3); lambat-palutaw (1); pamana (1); baklad (1)	15	4
Capsalay Island	77	43[3]	lambat-palubog (27); pangawil (7); timing (2); talakop (1)	25	11
Port Barton	273	83	pantihan-palubog; pangawil; pamana; baklad; pamo	20	63
Pamoayan	40	20	pangawil (10); pantihan-palubog (3); pamana (3); orang-orang	3	15
Naonao/Bigaho	25	25[4]	pangawil (25); orang-orang (25); pantihan-palubog (4); pangugita (1)	8	18
Baybay Daraga	55	55	pangawil (55); pangugita (55); pamana (55); lambat-pamusit (12); lambat-pang-danggit (2); lambat-panolid (1); lambat-palubog (1)	25	49
New Canipo	140	46	ganti-ganti (40); pangawil (40); lambat-palubog (8); bitana (4)	13	40
New Villafria Kemdeng Proper	300	240[5]	lambat-palubog (20); pangawil (3); baklad (3)	24	30
Poblacion					
Pinagmalucan	50	50	ganti-ganti (5); pantihan-palubog (43); bubo (20); pangawil (5); pamana (5); sikad-sikad (4)	15	10
Panindigan	200	140	ganti-ganti (140); pantihan-palubog (20); kurantay (13); kitang (5); baling (4); talakop (3); lambat-paanod (3); pangawil (1)	50	20

[1] Other households fish for food.
[2] Only two are regularly used for fishing.
[3] Does not include 30 fishing households on the other side of the island whose origins are from Masbate.
[4] Fishers fish for food only.
[5] Seventy-nine are fully dependent on fishing.
[x] Not in the list

Table 7.1 continued

BARANGAY/ sitio	TOTAL NUMBER OF HOUSEHOLDS	NUMBER OF FISHING HOUSEHOLDS	OWNERSHIP OF FISHING GEAR* (number of household)	OWNERSHIP OF BOATS** (number of households)	
Macatumbalen	194	22	lambat-palubog (22); pangawil (22); orang-orang (11); lambat-alimasag (10)	7	15
Daplac	36	36	pangawil (36); lambat-palubog (6); kitang (1)	20	16
Casoyan	37	37	pangawil (36); lambat-palubog (8); pamana (8); pamo (2); rabnot (2); katihan[x] (2); pamalo[x] (1)	15	17
San Isidro Bokbok	24	23	ganti-ganti (23); orang-orang (10); pangugita (10); pangawil (7); pantihan-palubog (6); pamo (2)	7	8
Alimanguan Purok 1	80	48	ganti-ganti (48); pangawil (48); pantihan-palubog (38); pamana (10); pamo (4); pantihan-palutaw (2)	38	10
Binga					
Imuruan Island	60	60	ganti-ganti (60); pangawil (60); pangugita (20); lambat-palubog (10)	25	20
Binga and Boding	148	133	pangawil (30); pamana sa pusit bahura (30); lambat-palubog (20); baklad (3); likos[x] (3); lambat-palutaw (1); rabnot (1)	93	106
Cauban	97	64	ganti-ganti (64); pangawil (64); lambat-palubog (20); lambat-paanod (2); baling (1); talakop (1); baklad (1)	32	32

* See List of Terms in the beginning section for the English names of the fishing gear mentioned here.
** Some households do not own a boat so the figures here do not necessarily match the number of households.
x Not in the list

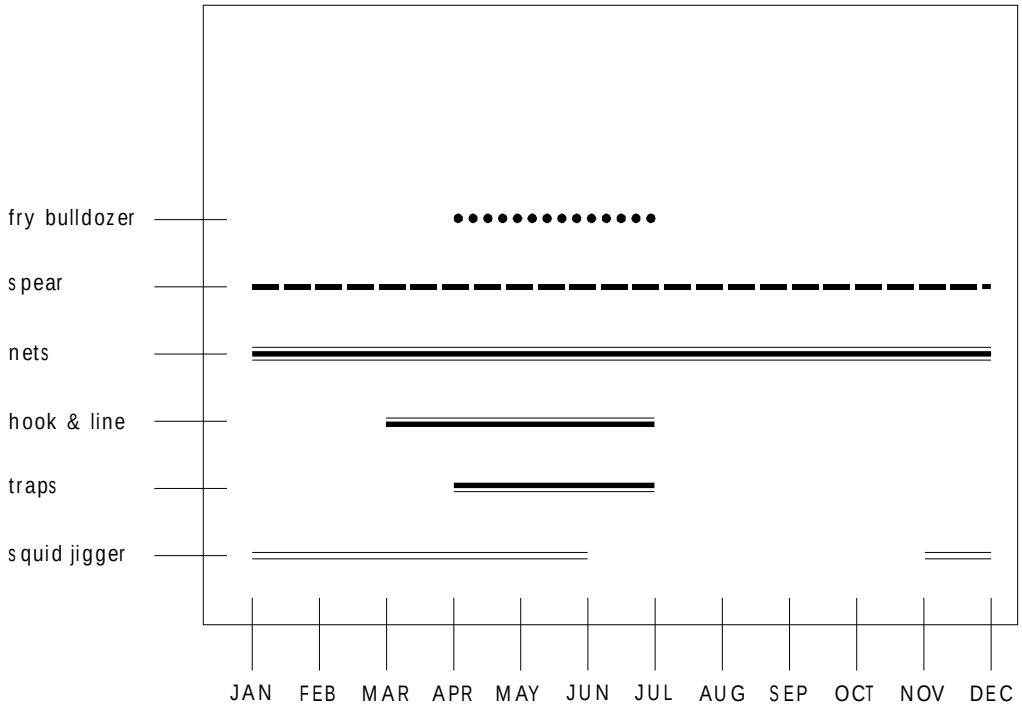


Figure 7.4. Seasonality of fishing gear, PCRA 1997.

the group interviews conducted during the PCRA.

TOURISM, MINING, ETC.

Beach tourism is a popular use for San Vicente's pristine shores. Despite the ubiquitous sand fleas (*nik-nik*) and pesky mosquitoes, visitors flock to the resort town of Port Barton during the summer months from March to May. Port Barton has numerous islands and coral reefs, its prime attractions. Other barangays also have good beaches, but the tourism industry has yet to take hold in most of these areas. From our interviews, we learned about persistent rumors of impending tourism development especially in the northern barangays, based largely on the increasing interest of land buyers in the area. Local residents noted, however, that nothing much had come out of these reports – the absence of roads and power facilities apparently posed a deterrent to tourism-oriented development in much of San Vicente.

Development of a different kind has come to San Vicente, one that is not altogether welcome as far as environment protection is concerned: the extractive silica mining industry, while creating employment and increasing tax revenues for the local government, has taken its toll on many of the coastal villages of San Vicente. During our interviews, villagers complained about the pollution of beaches and the siltation of inshore flats which they said had already reduced the productivity of the sea. In areas where silica had been mined out, the residents assailed silica mining companies for failing to make any effort towards rehabilitation. They blamed such inaction for the floods that devastated places like New Villafria, where washing activities and oil from the mine site also killed off once productive mangroves. In addition, workers complained of low wages, and landowners railed against the mining companies' low buying price for silica (ranging from P1 to P5 per cubic meter of silica extracted from their land).

Villagers complained about the pollution of beaches and the siltation of inshore flats which they said had already reduced the productivity of the sea.

Overharvesting of mangrove resources was not considered a major problem in most of the villages visited. Even the conversion of mangroves to fishponds was not seen as destructive, until it was pointed out in the habitat assessment session that this activity reduced the natural role of mangroves in preventing siltation and in supporting some species of fish

TABLE 7.2. Role of women fishers in San Vicente, PCRA 1997.

BARANGAY / SITIO	WHAT WOMEN DO
Caruray	
Catalat Island	reef gleaning for home consumption and sale especially during the northeast monsoon; go fishing with husband; vegetable farming in kaingin; mat weaving
Sta. Cruz	reef gleaning for home consumption
Gawid	reef gleaning for home consumption especially if there is no fish; fishing for home consumption; fish trading
Decala	reef gleaning and fishing for home consumption; vegetable farming
Old Caruray	reef gleaning for home consumption and sharing with neighbors; buying and selling fish
Port Barton	
Barongbong	reef gleaning for home consumption especially during the southwest monsoon; farming of cassava, sweet potato, and vegetables; broadcasting of rice seeds during planting season
Albaguen Island	reef gleaning for home consumption especially during the southwest monsoon; fishing for home consumption and sale; cleaning and preparing fish for drying; exchanging fish for rice in nearby villages
Pagdanan (shore area only)	reef gleaning for home consumption if there is no fish; buying, selling, and drying fish; fishing; charcoal making
Capsalay Island	reef gleaning for home consumption; fishing for livelihood; animal raising; farming of cassava, sweet potato, and banana for home consumption
Port Barton	reef gleaning for home consumption; buying and selling fish; fishing for livelihood
Pamoayan	reef gleaning for home consumption; buying and selling fish; animal raising
Naonao/Bigaho	reef gleaning and fishing for home consumption; making nipa shingles; mat weaving; kaingin farming
Baybay Daraga	reef gleaning for home consumption and sharing with neighbors; fishing for livelihood; kaingin farming; vegetable gardening
New Villafria Kemdeng Proper	reef gleaning for home consumption especially during the northeast monsoon and if there is no fish; go fishing with husband; making nipa shingles; mat weaving; vegetable gardening; hat making
Poblacion	
Pinagmalucan	reef gleaning for home consumption especially during the southwest monsoon; go fishing with husband; fish vending; farming
Panindigan	reef gleaning for home consumption especially during the southwest monsoon
Macatumbalen	reef gleaning for home consumption and exchange especially during the southwest monsoon; go fishing with husband
Daplac	reef gleaning especially if men cannot go out fishing; help husband in harvesting cashew; mat weaving
Casoyan	reef gleaning for home consumption, sharing with neighbors, and exchanging especially during the northeast monsoon; go fishing with husband
New Agutaya Bukana	making nipa shingles; milkfish fry gathering; shell gathering from mangroves for home consumption
San Isidro Bokbok	reef gleaning for home consumption; go fishing with husband; fish and squid drying; mat weaving; pig raising
Alimanguan Purok 1	reef gleaning for home consumption; fish vending; fish and squid drying; go fishing with husband; selling cooked food; operating small business like sari-sari store; making nipa shingles
Sto. Niño Purok 1	fish drying; repairing and mending nets
New Canipo	go fishing with husband; hired labor for land clearing, weeding, rice harvesting, and husking coconuts; mat weaving; making nipa shingles
Binga Imuruan Island	fish and squid drying; join husband in fishing; kaingin farming; pig raising; vegetable farming
Binga and Boding	reef gleaning for home consumption; milkfish fry gathering; fish and squid drying; join husband in fishing; harvesting of cashew nuts; making nipa shingles; mat weaving join husband in fishing; nipa shingles making; engage in small business; pig raising
Cauban	

and shrimp.

Settlements and ports posed some problems in a few areas. In the island of Albaguen, for example, the PCRA team observed that population density was so high that the place looked like a regular urban squatters' area. Rotting posts in Sta. Cruz and the Poblacion waters were not only eyesores; they also posed hazards to boats and their passengers.

Chapter 8
WHO'S IN CHARGE?
(Legal and Institutional Framework)

Among all Philippine provinces, Palawan stands out in the environmental scene not only because of its status as a major repository of biological diversity. Its reputation as an ecologically sensitive area has also given rise to a unique law called the Strategic Environmental Plan for Palawan or simply SEP. The centerpiece of the SEP law is the creation of an Environmentally Critical Areas Network (ECAN), basically a zoning system that divides each of the province's 23 towns and the capital city into core zones, buffer zones, and multiple-use zones (See Box 8.1). **Core zones** are restricted areas, such as national parks, marine reserves, and higher elevations that require maximum protection and minimal human intrusion. These core zones are surrounded by **buffer zones**, which are meant to shield the inner areas from economic activities. The lower and generally more developed areas are designated as **multiple-use zones**, where most town sites and settlements are found.

Palawan's reputation as an ecologically sensitive area has given rise to a unique law called the Strategic Environmental Plan for Palawan.

Under the SEP law, equitable access to resources is emphasized and local community management is encouraged. Ecological viability and social acceptability of development projects are given importance.

The Palawan Council for Sustainable Development — PCSD — was especially

created to implement the law. To decentralize decision-making, ECAN boards are supposed to be organized in each municipality with members from LGUs, tribal groups, and NGOs.

San Vicente is one of the pioneers in the implementation of the SEP. It was the first town to draw up an ECAN map and establish a communal forest, and the first to obtain the PCSD's approval for both. The municipality has finished the preliminary ECAN map for the terrestrial zone of 9 barangays; only Caruray, which is facing funding constraints, has yet to be delineated.

San Vicente is one of the pioneers in the implementation of the SEP.

These achievements came about as a result of the SEP-San Vicente Project, which then Mayor Antonio Alvarez created on April 3, 1993. The Project seeks to promote the self-sustaining development of San Vicente's fishers, farmers, and forest dwellers. It also recognizes the stakeholders' role as managers of the town's natural resources. The Project is based on the idea that if people are given the means to be self-sufficient, then there will be no need for external financial assistance, and local communities will become self-reliant.

The mayor's office assigned the Project's management to the newly-created Technical Assistance Office (TAO), composed mostly of experienced community organizers from the Visayas and Mindanao. The organizers' advantage was their facility with the language of many migrants in fishing communities, who share their origins.

The special project also made significant achievements in the area of coastal marine conservation according to the latest annual report of the municipal government. SEP-SVP personnel and supporters are protecting 1,538 hectares of mangrove forests. Fish sanctuaries have been identified in the following sites: 42.77 hectares in Binga, 45 hectares at the Poblacion, 123 hectares in Port Barton, and 25 hectares in Caruray. Some 20 hectares of artificial reefs are being managed in Binga, Port Barton and Caruray. The project also protects 130 hectares of seagrass beds.

From the interviews and sessions conducted during the PCRA, it would be fair to conclude that the biggest achievement of the Project was raising the environmental consciousness of most residents. One of the residents' complaints was that the laws

were too strict to the point of limiting their livelihood pursuits (which were, more often than not, destructive in nature). Almost everyone agreed, however, that illegal fishing in the municipality was drastically reduced as a result of marine patrols and community organizing efforts.

Some fishing communities have set up, and are still maintaining, their marine sanctuaries. To help increase productivity, the project staff introduced the use of fish-aggregating devices, such as *payaws* and *arongs* to the fishers. The effectiveness of these structures is still being debated.

Sadly, most of the fishers' and farmers' organizations, which the project helped set up, have become inactive. Many fishers attributed this to lack of capital or financial assistance for the projects they identified.

PCRA participants also expressed concern about the project's continuity. Mayor Alvarez, who initiated the project, completed his third and last term in 1998. Many San Vicente residents said they were afraid the SEP would go the way of similar projects, which expired with their initiators' terms of office, even as they acknowledged that municipal legislation put in place during Mayor Alvarez's term could provide continuity in the effort to protect the marine environment (Table 8.1).

Municipal legislation put in place during Mayor Alvarez's term could provide continuity in the effort to protect the marine environment.

One such legislation is Sangguniang Bayan Resolution 54-A Series of 1995 & Ordinance No. 5 Series of 1995, which bans the operation of compressor-aided fishing method in the municipal waters of San Vicente. This law sets the following penalties: first offense — P500 per person on board; second offense — P1,000 per person on board; third offense — P2,000 per person on board and confiscation of fishing gear or 6 months imprisonment or both. The rationale for this legislation is that the compressor-aided fishing method results in overfishing and is not sustainable. It also destroys coral reefs, poses danger to divers resulting in paralysis and death, and is often associated with the use of dynamite and sodium cyanide. The law covers the following activities: spearfishing; gill netting in coral reef areas; collection and gathering of shells, aquarium fish and other marine products; deep sea fish corral; *basnig*; *talakop*; *baling* or bag net; *paaling*; and other deleterious methods of fishing.

Another law is Resolution No. 16-B, Series of1994 & Ordinance No. 2 Series of 1994, which prohibits the operation of all transient migrants and non-residents of *basnig*, *likom-likom*, *pangulong*, and *galadgad* within the municipal waters of San Vicente. It imposes the following penalties: first offense — P1,000 fine; second offense — P2,000 fine; third offense — P2,500 fine or 6 months imprisonment or both.

Another set of guidelines which has implications for coastal development in San Vicente and all of Palawan are the PCSD guidelines for coastal tourism establishments in Palawan (Box 8.2). These guidelines are particularly important for guiding development initiatives in Port Barton.

TABLE 8.1. Resolutions and ordinances pertaining to coastal management in San Vicente.

DATE	TITLE
February 21, 1994	**Resolution No. 16-B, s. 1994.** "Resolution prohibiting the operation of all transients/migrants and non-residents of Basnig, Likom-Likom, Pangulong, Galadgad Fishing Operators within the municipal waters of San Vicente."
February 21, 1994	**Resolution No. 16-A, s. 1994.** "Resolution prohibiting the operation of Hulbot-Hulbot in the municipal waters of San Vicente, Palawan."
September 25, 1995	**Resolution No. 54-A, s. 1995.** "Resolution banning the operation of compressor aided fishing method in the municipal waters of San Vicente, Palawan."
November 27, 1995	**Resolution No. 74, s. 1995.** "Resolution authorizing the Barangay Councils, this municipality to create a special body whose members shall be coming from the different organizations in the barangays, to manage and protect the coral reefs, fish sanctuaries and other resources within their barangays as approved land and water use plan for San Vicente."
November 10, 1997	**Resolution No. 110, s. 1997.** "Resolution/Ordinance declaring a fish sanctuary at Albaguen Island."
November 24, 1997	**Resolution No. 126, s. 1997.** "Resolution/Ordinance declaring a fish sanctuary at Nagolon Island 500 has. and Kinabuga-an Point 5.0 has."
January 6, 1998	**Municipal Ordinance No. 03, s. 1997.** "An ordinance declaring a fish sanctuary at Albaguen Island."
January 6, 1998	**Municipal Ordinance No. 10, s. 1997.** "An ordinance declaring a fish sanctuary at Nagolon Island 50 has. and Kinabuga-an Point 5,000 has."

Box 8.1. Summary of the PCSD guidelines for the coastal/marine component of the Environmentally Critical Areas Network (ECAN) for Palawan.

BASIC CONCEPT AND POLICY

The whole of Palawan is considered as one protected area composed of subprotected areas with different levels of management options. The underlying philosophy is to provide equitable access to the resources and to assign responsibility for their management to the local government unit and the community. Palawan's ECAN Coastal Zone shall adopt the concept of marine parks and reserves, which usually requires limited entry and encourages various uses with emphasis on education, recreation, and preservation.

It is the policy of PCSD to support and promote the sustainable development of Palawan through proper conservation, utilization and development of its natural resources to provide optimum yields on a continuing basis. It shall also promote and encourage the involvement of all sectors of society and maximize people participation in natural resource management, conservation, and protection. PCSD also recognizes the significance of preserving and declaring certain areas free from human intervention to maintain ecological balance.

The whole of Palawan is considered as one protected area composed of sub-protected areas with different levels of management options.

COVERAGE OF COASTAL/MARINE AREAS

Coastal areas included in ECAN zones shall consist of all the surrounding waters starting from the highest water mark extending up to 15 km in the open sea of mainland Palawan and its islands, waters between islands and islets forming part of the province, small islands not covered under the terrestrial ECAN guidelines, and all mangrove areas and mangrove associates.

COASTAL ZONES AND THEIR CRITERIA

The classification and criteria for coastal zones are as follows:

1. Core Zone
    - 1.1 Coral Reefs
        - a) Portion of contiguous or aggregation of reefs with the highest percentage of live coral cover, with an area of at least 25% thereof, located in areas optimal to enhancing fish recruitment based on oceanographic conditions, linked with seagrass beds.
        - b) Coral reef areas containing all species found in the management unit.
    - 1.2 Seagrass Beds serving as link habitat of the coral core zones and / or providing habitat for endangered species.
    - 1.3 Coastal marine habitat of endangered species declared by IUCN, CITES, DENR, or PCSD.
    - 1.4 All areas with standing mangrove forests.
    - 1.5 Uninhabited islands or portions of undeveloped islands not subject to existing private rights or in cooperation with the owner.
    - 1.6 Protected coastal areas forming part of declared parks and sanctuaries, such as Tubbataha Reef National Marine Park, St. Paul Subterranean River National Park, Ursula Island, Calauit Game Preserve and Bird Sanctuary, and El Nido Marine Reserve.
    - 1.7 All areas declared as protected by the concerned LGU.
2. Multiple Use Zone
    - 2.1 Buffer zone — serves as the transition between the strictly protected core zone and the general use zone where important species and processes necessary for sustaining the core zone are to be maintained.
    - 2.2 General use zone — the development area where different compatible and sustainable activities may be carried out in five subdivisions:
        - a) Communal Fishing Ground where monitoring is done to ensure a sustainable level of production
        - b) Communal Mangrove Forest and Mangrove Swampland Area which are presently used

by communities, fishpond developers, etc. Areas opened without undergoing the normal legal process shall be converted to communal mangrove subject to valid private rights and government regulations.

c) Tourism Development Area

d) Visitor Use Area where appropriate recreation and general education activities, such as snorkeling, scuba diving, and kayaking are allowed.

e) Sustainable Development Area where other structures and activities may be allowed subject to environmental regulations.

Local communities shall be involved in all phases of the ECAN from delineation up to its implementation and long-term management.

CONSULTATION

With the assistance of PCSDS, the LGU shall organize a Barangay Management Council composed of LGUs, NGOs and POs, and other concerned agencies prior to the identification of the coastal zone. The PCSDS shall coordinate with these groups in the information campaign regarding the ECAN zoning process. Local communities shall be involved in all phases of the ECAN delineation up to its implementation and long-term management. Trainings, seminars, and other participatory activities shall be conducted to empower the communities. The LGU shall be responsible for holding community consultations.

ACTIVITIES

The following may be allowed in each zone:

1. Core Zone
    a) navigation for local fishers if there is no alternative route
    b) research authorized by PCSD
    c) emergency situations, e.g. when there is threat to human lives
2. Multiple Use Zone
    2.1 Buffer Zone
        a) restricted recreation — swimming and snorkeling, non-motorized boating (row boats, kayaks, canoes, wind surfing), guided scuba diving
        b) research and monitoring authorized by PCSD
        c) pre-approved visitor education activities, e.g. tours given on guide boats
        d) cultural activities of indigenous people
        e) installation of information boards for environmental purposes
    2.2. General Use Zone
        a) Communal Fishing Ground — non-destructive fishing, aquaculture and mariculture, fry collection and shell gathering, navigation, fishery support facilities and infrastructure (e.g. docking area), artificial reefs
        b) Communal Mangrove Forest — plantation and aquasilviculture, mangrove rehabilitation, salt ponds, recreation, such as bird-watching and hiking, research and monitoring authorized by PCSD, educational activities
        c) Tourism Development Area — building of infrastructure, such as resorts, recreation, artificial reefs, habitat structures (e.g. bird-watching nuts)
        d) Visitor Use Area — environmental education, such as study tours, recreation, such as snorkeling and swimming, sports fishing, picnic grounds and beach sheds
        e) Sustainable Development Area — pebble-picking, salt making, wharf construction, reclamation, shipping, solid and liquid waste management

ZONING PROCESS

Steps to be undertaken and responsible agencies are as follows:

1. Identification of Zones - The PCSD shall coordinate with the LGU and its BMCs in identifying the initial coastal zones. The LGU shall conduct preliminary assessment of the coastal areas with the assistance of the PCSD.
2. Preliminary Mapping - The LGU and its BMCs shall conduct mapping activities with the assistance of PCSDS and appropiate agencies.
3. Ground Truthing and Field Validation - The PCSDS shall spearhead the field validation of the preliminary maps (1:50,000) through consultations, GPS, and surveys with the assistance of the LGU, BMCs, and concerned agencies. Upon completion, an ECAN map shall be prepared and submitted to the PCSD for approval.
4. Conflict Resolution - The ECAN Boards and the concerned BMC shall resolve earlier claims, conflict, or opposition through consultation and negotiation.
5. Zoning Plan - Upon the PCSDS' recommendation, the LGU shall submit its zoning plan (with technical description and allowable activities) to the PCSD for approval. The PCSDS and LGU may review and update the plan whenever new information is available.
6. Boundary Delineation - Upon approval of the plan, the PCSDS shall conduct field delineation, which involves surveying and marking visible boundaries. Local government units shall provide funds for this activity in coordination and consultation with the CENRO, provincial government, DA-BFAR, and other organizations.

MANAGEMENT

Local government units (city or municipality) shall exercise general supervision and control over the management of their coastal/marine areas in conformity with existing laws, e.g. NIPAS and SEP.

Upon the PCSD's approval of its zoning plan, the LGU through its BMC shall prepare a comprehensive management plan taking into consideration the following issues:

1. stakeholders' participation in the conservation and development of natural resources
2. encroachment of commercial fishing vessels on municipal waters
3. treatment of protected areas under NIPAS
4. inter-agency participation
5. protection of coastal areas and enforcement of fishery laws
6. monitoring and evaluation schemes, including pollution control
7. regulatory measures/permit system
8. allowed activities for each zone
9. provision of alternative livelihood projects
10. protection of the access rights of the community to the natural resources
11. migration and settlement within coastal areas

The management plan shall be evaluated by the PCSDS to ensure its conformity with the SEP Law and other guidelines. The Plan shall then be adopted by the Sangguniang Panlalawigan through a provincial resolution, and the Sangguniang Bayan through a municipal resolution. Upon its adoption, the Plan shall be submitted to the PCSD for approval.

The LGU shall implement the management plan through its BMC. The PCSDS shall lead the monitoring and assessment, conduct environmental studies, and undertake intensive environmental education and extension services.

Box 8.2. Summary of PCSD guidelines for tourism-oriented establishments in Palawan relevant to coastal zones.

- The mandatory beach front easement along the coastline shall be established at 5 meters from the tree line identified by LGUs. There shall be no permanent or temporary structures or signs for whatever purpose within the mandatory easement except those authorized by the LGUs.
- The established building line of 5 meters from the mandatory beach front easement shall govern the siting of all structures along the coastline.
- All permanent structures shall at least be 10 meters from the established high water level of mangroves, swamps, and freshwater lagoons.
- Construction along established waterways, intermittent or perennial, shall observe the 5-meter easement on both sides of the waterway.
- Waterways that flow through or traverse a tourist development area shall not be relocated or blocked and any structure that will tend to impede the free flow of water shall not be allowed.
- The preservation of trees and other species of plants in the province is mandatory.
- Plants not indigenous to the province shall not be introduced unless properly cleared with the LGUs and the DENR.
- Solid waste shall be separated at source into recyclable, biodegradable, and compostable material. If composting is to be done at backyards, the composting pit shall be located at least 25 meters away from any water source and shall be covered with sufficient soil after every disposal.
- Discharge of waste water from kitchen sinks, toilet, and bath facilities shall be through appropriate connections to the septic tank, which shall be provided by all establishments either individually or communally. Septic tanks shall be located at least 25 meters away from any water source. No septic tank shall be constructed under any building. The effluent from septic tanks shall be discharged into designated absorption fields.
- The use of indigenous materials, such as wood, nipa, and bamboo shall be encouraged. The overall design concept shall adopt Philippine architecture for tropical environment.
- In no case shall the management or accommodation facilities allow swimming in coastal waters beyond 10 p.m. and appropriate notices shall be posted within the establishment to inform the guests of this regulation.
- Any tourism-oriented establishment must prepare an initial environmental examination (IEE) report. The concerned LGU, in consultation with the Tourism Committee of the PCSD, shall determine whether an Environmental Compliance Certificate (ECC) shall be required prior to the approval of the said application. However, an ECC must first be secured for establishments located in an environmentally critical area, which includes mangroves, coral reefs, small islands, and areas classified as ECAN Core Zones by the PCSD.
- The LGU, in consultation with the PCSD through its Tourism Committee, may require the proponent to prepare an Environmental Impact Statement (EIS) in addition to the IEE, where it is deemed necessary in view of its potential environmental impact.

Chapter 9
FISHERS (AND SCIENTISTS) ARE TALKING ABOUT...
(Issues and Management Considerations)

It is not always readily obvious how some of the issues identified by San Vicente's fishers in the resource mapping and transect diagramming sessions relate to coastal resource management. It is not easy to connect, for example, the lack of clean water or schools or health facilities to marine conservation.

A closer look at the lives of the people in coastal villages, however, leads to a greater understanding of the daily constraints they face as they strive to earn a living amid the uncertainties of their existence. The problem of lack of schools takes on a new dimension when placed in the context of young people being driven into early marriages by lack of educational opportunities, thereby exacerbating population pressures that lead to greater resource exploitation.

Another problem often mentioned is the absence of adequate health care in most villages. When a member of the family gets sick, the patient has to be transported to town centers for treatment, and the family gets mired in debt. To raise money, some households resort to illegal but

A closer look at the lives of the people in coastal villages leads to a greater understanding of the daily constraints they face as they strive to earn a living amid the uncertainties of their existence.

highly profitable fishing methods, such as dynamite fishing, so they can pay off their debts.

Lack of potable water is also related to the cycle of illness and debt, and it also has an impact on the people's ability to produce food for themselves especially during the lean fishing season. Without water, residents cannot have vegetable gardens and have to rely on rain for their rice farms.

Lack of potable water is also related to the cycle of illness and debt, and it also has an impact on the people's ability to produce food for themselves especially during the lean fishing season.

The absence of roads, and bridges that need repair, cause problems in marketing fish catch. Even when the fishers enjoy a bountiful catch, they are not able to profit from the sale of their harvest. Without farm-to-market roads (or, in this case, fishing village-to-market roads), fishers have to depend on buyers who go to their villages and dictate seafood prices.

In the Silliman University study, researchers identified the use of sodium cyanide, dynamite, and compressor-aided fishing as the primary causes of coral reef degradation in San Vicente. They also mentioned trends leading towards greater exploitation of marine resources – that is, overfishing — as another cause for concern.

Participants in the barangay mapping sessions identified 30 issues prevalent in most communities. These issues are listed in Figure 9.1, and are also found in the coastal resource maps of each barangay (see Chapter 4).

Most of the issues identified by the fishers fall under four rough categories: impact of land-based activities, resource use, resource access, and social services. These issues were also mentioned and sometimes explained in greater detail during the transect diagram session and interviews conducted by the PCRA team. Table 9.1 summarizes these issues and puts them in the context of habitat, so it is easier to see where the problems are and what solutions can be prescribed. Again, it is important to note that the perpetrators of some activities — for example, illegal fishing – are not necessarily residents of San Vicente.

The International Marinelife Alliance - Philippines, in its 1996 study on San Vicente, also asked villagers about particular issues related to destructive fishing. The group reported that most fishers interviewed were hesitant to talk about the use of

Figure 9.1. Major coastal resource management issues in San Vicente, PCRA 1997.

sodium cyanide. It also noted that the "Baywatch team" of the municipality lacked personnel, gasoline for their patrol boats, and other logistical needs. Moreover, the dismissal of many illegal fishing cases by the local court discouraged authorities from strictly enforcing fishery laws. The study cited "lack of political will on the part of local officials" as a factor in the continuing use of destructive fishing methods in San Vicente, without going into details.

During the PCRA session on Trend Diagrams, the facilitators found it difficult to measure fish catch and establish trends because of the transient nature of most fishing communities and the highly seasonal cycle of their sources of livelihood. In

Table 9.1. Summary of coastal resource management issues in San Vicente, PCRA 1997.

CATEGORY OF ISSUES	BEACH	INSHORE FLAT	LAGOON/ BAY	OFFSHORE CORAL REEF	ISLAND/ MANGROVE	DEEP OCEAN
Impact of Land-Based Activities Resource Use	● pollution from silica mine and domestic waste ● landslide ● erosion ● floods due to logging	● diminishing bangus fry due to pollution from silica mine ● fewer shells due to siltation ● use of *tubli*		● siltation from logging		
Resource Access	● squatting ● land reclamation for logging camp ● lack of alternative livelihood ● weak organization ● land sales	● lack of knowhow in bangus fry harvest ● too much gleaning	● strict laws ● fewer fish, more fishers ● use of baby purse seine ● pearl farm bans fishers	● muro-ami fishing ● use of compressor, dynamite & cyanide ● theft of *arong* ● pollution from big boats	● illegal construction of fishpond ● cutting of mangrove forests	● dynamite & cyanide fishing ● use of compressor ● lack of gear (e.g. nets, big boats) ● use of *pangulong*
Basic & Social Services	● no land tenure ● restricted access to homestead (Caruray) and fishing grounds (Sto. Niño) ● lack of roads		● users' rights ● outsider owns fish corral (Catalat) ● use of compressor ● lack of fishing gear	● outside fishers causing decline in fish catch	● restricted area ● ownership of island (Garcia in Caruray) in question ● illegal nipa claim	● commercial fishers from other provinces getting all the fish ● too many fishers
Environmental Factors	● lack of nutrition ● dense population ● lack of schools, communication system, seaports, cooperatives, credit facilities, clean water, health centers ● *lumot* & garbage during southwest monsoon ● floods	● channel for boats too narrow (old site in Caruray)	● channel for boats too narrow (old site in Caruray)	● no market for fish catch	● cannot fish when the sea is rough (Isla Manok)	

many villages, most fishers engage in farming during the rainy season. Also, they use different gears depending on what is considered the most efficient during a certain period, so the volume of fish catch may not necessarily reflect the productivity of the sea through the years. For example, the rampant use of illegal fishing methods and bigger nets in the mid-1980s could be the main reason for better catch during that period and not the presumably relatively healthier conditions of the coastal environment (See Figures 9.2, 9.3, 9.4, 9.5).

The dismissal of many illegal fishing cases by the local court discouraged authorities from strictly enforcing fishery laws.

Our interviewees in San Vicente agreed that fish catch had been declining steadily in recent years, following the national trend. Most of them attributed the decline to the introduction of highly efficient but destructive methods, such as the use of dynamite and *muro ami* in catching fish. In areas where fishery productivity showed improvement in the last three years, interviewees credited the municipal government's marine conservation programs for increases in their fish catch. There were questions about the sustainability of these programs, however, given the weakening of fishers' organizations and lack of material support for their projects.

Samples of the trend diagrams drawn by the fishers of San Vicente are shown in Figures 9.2 to 9.5.

An analysis of management issues for Port Barton is presented in Table 9.2. This reveals a tale of problems somewhat indicative of the whole of San Vicente and Palawan Island.

Table 9.2. Management issues and their causes Port Barton

I. Impact issues		
use/activity	***environmental change***	***impact of social concern***
1. blast fishing, mostly by migrant fishers and occa sionally by locals	overfishing, destruction of reef structure, decreased habitat diversity, major changes in the biological communities on reefs	decreased fish yield, decreased tourism attraction, decreased income, waste of resources
2. fishing for live food fish using sodium cyanide	death of corals and other marine organisms, major changes in the biological communities on reefs	decreased fish yield, decreased tourism attraction, public health hazard
3. fishing using drag nets like beach seines	destruction of seagrass beds, physical alteration of sea bottom, disturbance of benthic communities, growth overfishing	decreased fish yield, decreased income
4. spearfishing with the aid of compressor	depletion of large bottom, slow growing, late maturing, low fecundity, sequentially hermaphrodite species	decreased fish yield, decreased income, health hazard (lung damage)
5. fishing using fine-mesh fish nets	growth overfishing, high incidence and waste of by-catch	decreased fish yield, waste of resources
6. fishing using Danish seines	growth overfishing, non-selective extraction, physical alteration of sea bottom	decreased fish yield, conflict among fishers
7. encroachment of commercial fishing boats using highly efficient gears	overfishing	decreased fish yield, conflict between commercial and municipal fishers, decreased income
8. catching of spawners	recruitment overfishing	decreased fish yield
9. catching of protected species like marine turtles	extirpation/local extinction of protected species	loss of biodiversity
10. intensive fishing effort	overexploitation of fish stocks	decline in overall catch, reduction in size of individuals taken, changes in species composition, longer fishing time, reduced profitability or incurrence of losses
11. encroachment of tourism facilities like cottages, bars and moorings in foreshore lands and beaches	physical alteration/in-filling, potential interference with natural patterns of longshore sediment movement eutrophication, spread of pathogens,	increased coastal hazard, reduced aesthetic quality, conflict with local population over access, site degradation
12. discharge of domestic and tourist solid and liquid waste	contamination of fish and shellfish, beach pollution coral damage, disturbance of other	public health hazard, coral reef degradation, decreased fish yield, decreased tourism attraction
13. boat anchoring on the reefs	benthic organisms physical damage of coral reefs	reduced aesthetic quality
14. increasing number of tourists	erosion, increased sediment load of	reduced aesthetic quality
15. inappropriate agricultural practices	coastal waters, coral damage increased sediment load of coastal	decrease in fish yield
16. deforestation	waters, coral damage physical alteration/in-filling, potential	decrease in fish yield
17. local residential development in beaches and foreshore lands	interference with natural patterns of longshore sediment movement	increased coastal hazard, reduced aesthetic quality, site degradation

II. Institutional issues

1. weak fish warden association
2. inactive community organizations
3. community organizations lack capital build-up and experience in running income generating projects
4. lack of knowledge about fishery laws, particularly their specific prohibitions, penal provisions and rationale
5. low public awareness about marine mammal conservation
6. non-enforcement of the beach seine ban
7. theft of mooring buoys
8. lack of implementation of measures to limit fishing effort
9. absence of information campaign about existing fish sanctuaries
10. inadequate logistical and legal support for law enforcement

III. Development/planning needs

1. tourism management that is sustainable, equitable, compatible with both visitor satisfaction and reef health, and within limits of acceptable change
2. non-capture fisheries-based livelihood promotion that uses local materials and includes skills training, financing and marketing support
3. family planning campaign to reduce population growth and pressure on the natural resources

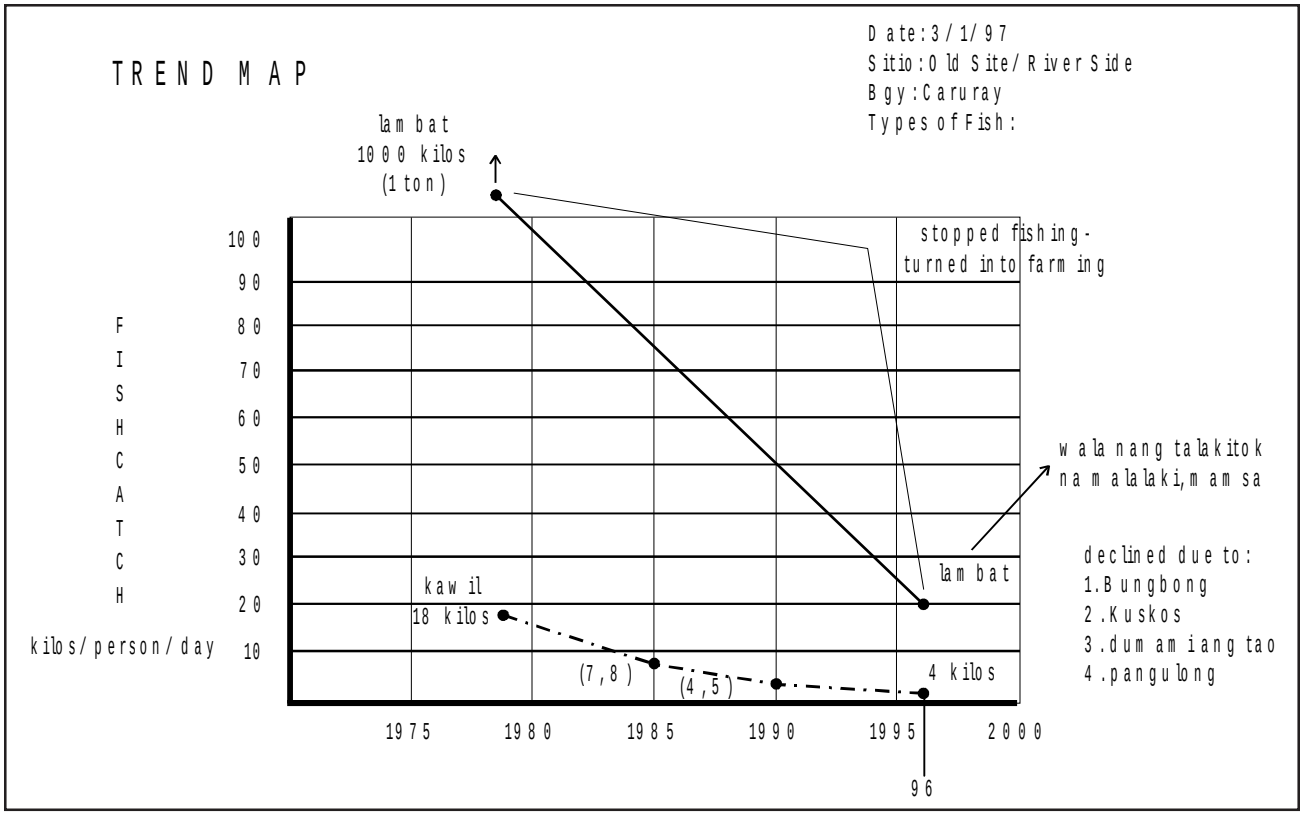


Figure 9.2. Trend diagram for Sitio Old Site, Caruray.

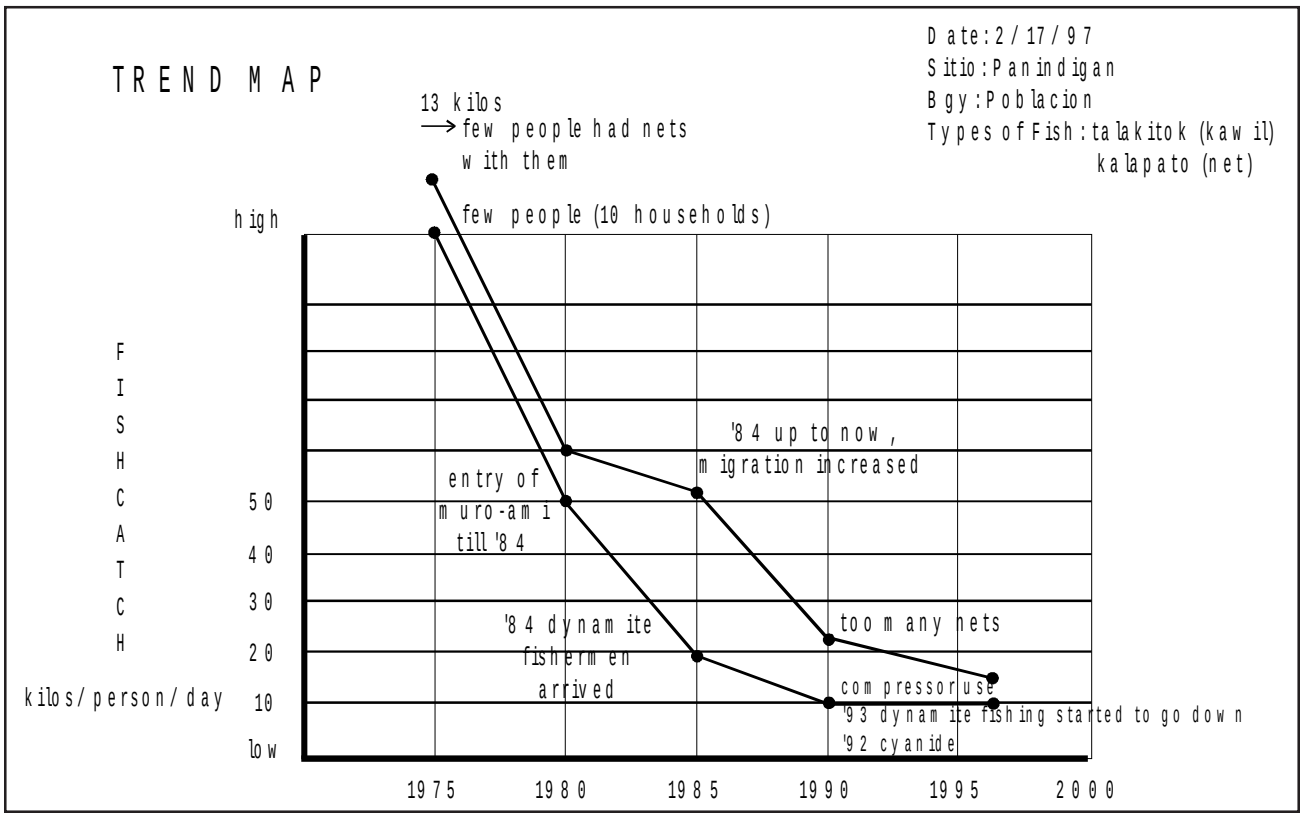


Figure 9.3. Trend diagram for Sitio Panindigan, Poblacion.

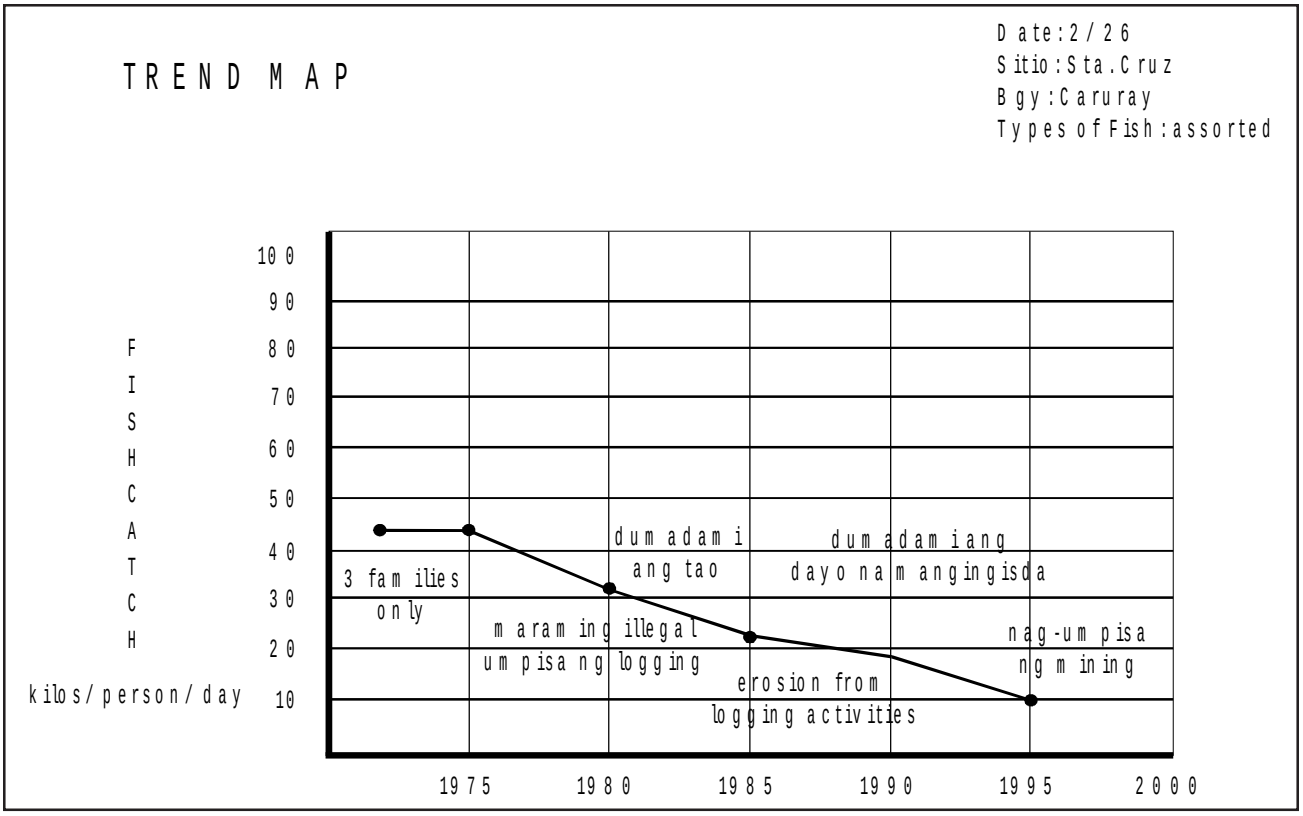


Figure 9.4. Trend diagram for Sitio Sta. Cruz, Caruray.

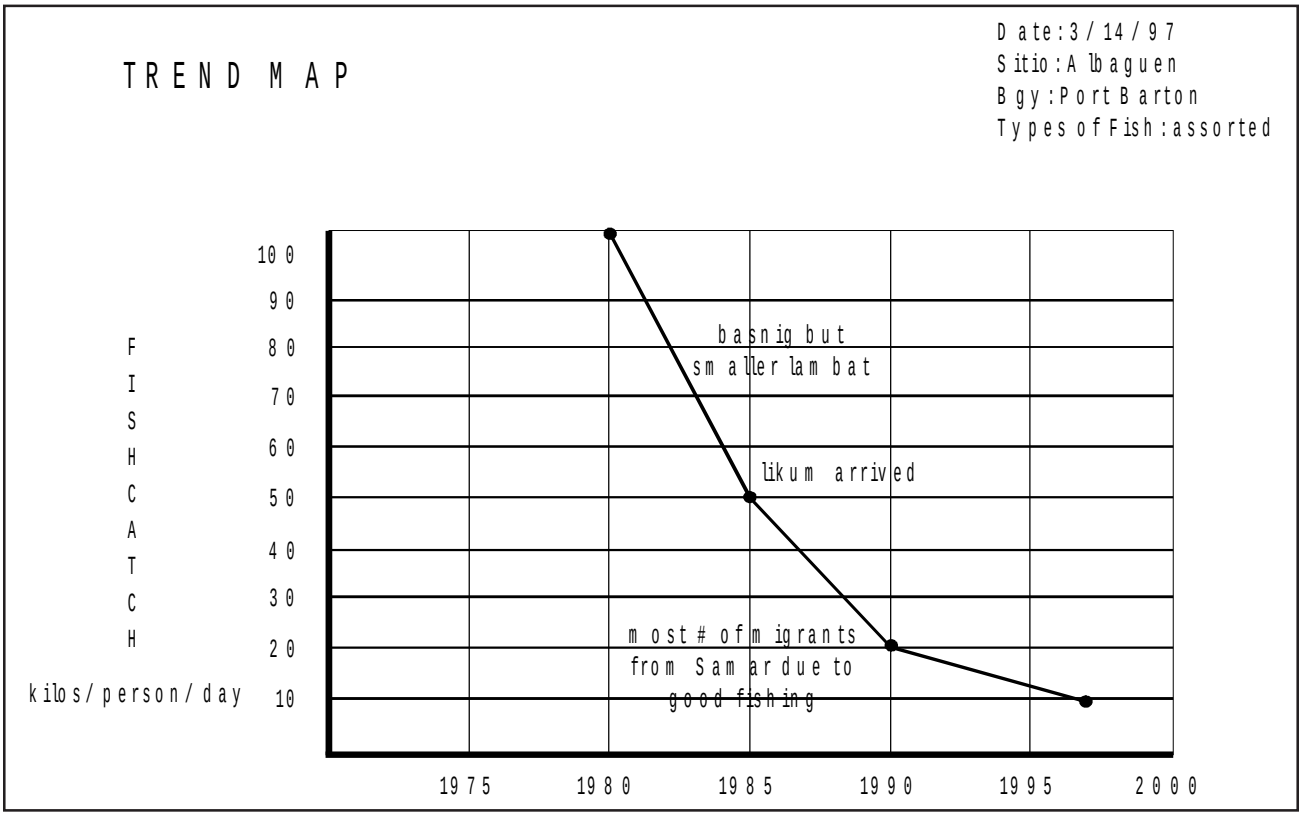


Figure 9.5. Trend diagram for Sitio Albaguen, Port Barton.

REFERENCES

Coastal Resource Management Technical Working Group (CRM-TWG), Port Barton. 1998. Port Barton coastal resource management program action plan, 1999-2003.

Curran S. and M. Comer. 1998. Assessment of coral reef sites in Port Barton, Palawan. Report prepared for the Coastal Resource Management Project and the Palawan Council for Sustainable Development.

Environs Systems Group Inc. 1991. Developing with nature. Final Report 3: A comprehensive development plan for the municipality of San Vicente.

International Marinelife Alliance - Philippines (IMA). 1996. Community profiles and site assessment surveys in the municipality of San Vicente, province of Palawan.

Jordan, R. 1998. Port Barton tourism profile. A survey prepared for the Coastal Resource Management Project.

Philippine Center for Investigative Journalism. 1996. Patrimony: 6 Case studies on local politics and the environment in the Philippines. (Chapter on Turning Green in the Country's Last Frontier).

Rau, N. and A. Rau. 1980. Commercial marine fishes of the Philippines. German Agency for Technical Cooperation.

Schroeder, R.E. 1980. Philippine shorefishes of the western Sulu Sea. National Media Production Center, Manila.

Siar, Susana V. 1997. Report on the Participatory Coastal Resource Assessment (PCRA) in San Vicente, Palawan. Coastal Resource Management Project.

Silliman University Marine Laboratory (SUML). 1996. Status of the coastal resources of the San Vicente, Palawan Learning Site. Silliman University.

Strategic Environmental Plan - San Vicente Palawan (SEP-SVP). 1994. Strategic Environmental Plan, San Vicente, Palawan, Technical Assistance Office, San Vicente.

Technical Assistance Office (San Vicente). 1993. Socio-economic profile, Municipality of San Vicente, Palawan.

Technical Assistance Office (San Vicente). 1993. Barangay profiles, Municipality of San Vicente.

Walters, Jeffrey S., J. Maragos, S. Siar and A.T. White. 1998. Participatory Coastal Resource Assessment: A handbook for community workers and coastal resource managers. Coastal Resource Management Project and Silliman University, Cebu City, Philippines. 113p.

LIST OF PARTICIPANTS

PCRA Training at the Resource Management Center
13-14 February 1997

John Resurrecion	-	Municipal Agriculturist's Office
Roberto Pascual	-	Municipal Agriculturist's Office
Medy Tabangay	-	Office of the Provincial Agriculturist
Rolando Seno	-	Poblacion, Pinagmangalucan Neighborhood Association
Edwin Garcia	-	San Isidro, Bokbok Fishermen's Association
Remegio Abique	-	San Isidro, Bokbok Fishermen's Association
Alfredo Garpeza	-	Sto. Niño Fishing Group
Noli de Guzman	-	New Villafria Fishing Association
Moises Opeder	-	New Villafria, Magsasaka at Mangingisda ng Villafria
Dioscoro Atabelo	-	Caruray, Catalat Fishermen's Association
Lindy Sunico	-	Binga Farmers' & Fishermen's Association
Gerlito Gamuyao	-	New Agutaya, Bucana Fishermen's Association
Rodolfo Vergara	-	Alimanguan Fishermen's Association
Virgilio Abrina	-	New Canipo, OIC Barangay Captain
Vicente Gacayan	-	New Canipo, Barangay Kagawad
Fernando Mahinay	-	Binga, Boding Fishermen's Association
Susan Gavino	-	Greencom/Gold
Paul Sgarlato	-	Peace Corps Volunteer
Pacita Morallos	-	Poblacion, Panindigan Fishing Association
Abdulia Libarra	-	Port Barton, Barangay Kagawad
Sylim Bulan	-	Sto. Niño LGU
Gobernador Francisco	-	New Agutaya, Bucana Fishermen's Association
Del Eleazar	-	PCSDS
Rhoda Roque	-	PCSDS
John Pontillas	-	PCSDS

Pinagmangalucan, Barangay Poblacion
16 February 1997

1. Florenda Seno	-	Vice President, Pinagmangalucan Fishermen's Association	
2. Rosario Seno	-	Secretary	-do-
3. Rolando Seno	-	Treasurer	-do-
4. Ronilo Mago	-	Auditor	-do-
5. Rolito Seno	-	BOD	-do-
6. Rolly Solas	-	BOD	-do-
7. Caridad Seno	-	Member	-do-
8. Anastacia Mago	-	Member	-do-
9. Nilda Javier	-	Member	-do-
10. Wilfredo Lucilo	-	Member	-do-
11. Tiburcio Seno	-	Member	-do-
12. Roger Ubadillo	-	Member	-do-
13. Jacinto Evio	-	Member	-do-
14. Sergio Colbe	-	Member	-do-
15. Toto Mago	-	Member	-do-

Panindigan, Barangay Poblacion
17 February 1997

1. Noel Boltron	Sangguniang Kabataan chairman
2. Teresita Demdam	Asst. Treasurer, Purok
3. R. Caabas	
4. Eleazar Palim	
5. Enrique Cabantay	
6. Romulo Penaro	
7. Elfreda Lan Rigaya	
8. Zenaida Abian	
9. Analiza Mampil	
10. Melesena Regara	
11. Pacita Morallos	
12. Ester Dagsalio	
13. Georissa Dagsalio	
14. Nida Adion	
15. Concordia Dagsalio	
16. Rosie Zummaraga	
17. Adelina Dagsalio	
18. Nonita Dulot	
19. Supronio Gadiano	
20. Marietta Atay	
21. Rosario Dagsalio	
22. Nelia Dulot	
23. Arlene Bonbon	
24. Leonardo Demdam	
25. Dioscorro Roxas	
26. Virgie Escobedo	
27. Perlita dela Cruz	
28. Francisco de Belen	
29. Felipe dela Cruz	
30. Henry Dulay	
31. Juan Cesora	
32. Miguel Deocarisa	
33. Enrico Adion	
34. Rodolfo Domeo	
35. Jose Batul	
36. Rodolfo Lastimado	
37. Ronaldo Cadalgo	
38. Rose Belano	
39. Edith Novio	
40. Rosie Abian	
41. Aurora Abian	

Macatumbalen, Barangay Poblacion
18 February 1997

1. Alberto Quintino
2. Ermelito Caab
3. Romy Pacurza
4. Edwardo Estimo
5. Desiree Peralta
6. Alfredo Palay
7. Rodolfo Tamondong
8. Josephine Pacurza
9. Salvador Abela
10. Bienvinido Monzaga
11. Rosalita Nopat
12. Judith Pacurza
13. Rufina Palay
14. Jessica Abela

Purok Daplac, Boayan Island
20 February 1997

1. Mateo Flor
2. Nito Arnaiz
3. Venancio Refamonte
4. Nardo Arnaiz
5. Eliaquen Verdida
6. Jeremy Verdida
7. Joel Verdida
8. Mercy Astoriano
9. Lucy Villar
10. Emily Amanto
11. Julieta Flor
12. Samuel Pilapil
13. Edgar Allan
14. Lodovico Astoriano
15. Nita Moriono
16. Samuel Arnaiz

Casoyan, Boayan Island
21 February 1997

1. Mansalini Bacolod	Sitio Chairman
2. William Giducos	Association President
3. Avelino Dandal	
4. Romulo Salazar	
5. Lazano Agayon	
6. Marilyn Romualdez	
7. Babie Batiancila	
8. Jerry Agorao	
9. Ganie Ibanez	
10. Melchor Canejos	
11. Antonio Orbiso	
12. Frankie Bendol	
13. Wendel Abriguez	
14. Elmer Francisco	
15. Alorde Golben	
16. Loliet Golben	
17. Ricardo Conde	
18. Terry Panarez	
19. Elsa Salazar	
20. Rebecca Orbiso	

Catalat Island, Caruray
25 February 1997

1. Dioscoro Atabelo	Sitio Chairman
2. Paquito Gorgonio	Association President
3. Wilfredo Atabelo	
4. Eleazar Lucion	
5. Gerry Pepito	
6. Danilo Lauron	
7. Jaime Asuque	
8. Eddie Gorgonia	
9. Francisco Pilapil	
10. Gondito Egrobay	
11. Lelito Asuque	
12. Elena Asuque	
13. Florencia Asuque	
14. Mila Suarez	
15. Maria Atabelo	
16. Amalia Atabelo	
17. Alicia Gorgonia	

Sta. Cruz, Caruray
26 February 1997

1. Isaac Pecore	Purok Chairman
2. Anselmo Coching	Association President
3. Porfiria Marikit	
4. Romualda Penaranda	
5. Norma Betasuelo	
6. Norie Garpeza	
7. Gina Jungco	
8. Margie Basmang	
9. Isaac Pecore Jr.	
10. Roberto Coching	
11. Leng Labindao	
12. Liberty Coching	
13. Glenda Cayamo	
14. Vilty Velasco	
15. Rodolfo Coching	
16. Arlene Trinidad	
17. Florina Pilapil	
18. Vilma Verba	
19. Concepcion Labindao	
20. Merlinda Masong	
21. Rico Punay	
22. Amelia Canoso	
23. Elizabeth Canoso	
24. Arlene Gabane	
25. Victoria Trinidad	

Gawid, Caruray
27 February 1997

1. Gloria Alac	Resource Management Center Adviser
2. Chona Rosialda	
3. Sancina Abello	
4. Eliza Rosialda	
5. Liberty Gregorio	
6. Renato Orpesa	
7. Leopoldo Estolloso	
8. Rodolfo Galazino	
9. Nating Abano	
10. Velmor Palanas	
11. Gracia Palanas	
12. Rosalinda Abrozo	
13. Jose Rosialda	
14. Ariolina Dorado	
15. Delia Bernales	
16. Edilberto Demato	
17. Manuel Orpilla	
18. Inocencio Eftono Jr.	
19. Francisco Telles	
20. Dado Eriscan	
21. Adelaida Abonales	
22. Delia Villamor	

Decala, Caruray
28 February 1997

1. Pablito Villas — Purok Chairman
2. Arturo Juanis
3. Rolly Abano
4. Nelson Evio
5. Estrella delos Reyes
6. Nenita Mondarez
7. Rutida Buhatin
8. Rosavilla Danao
9. Leonila delos Santos
10. Martin delos Santos
11. Agustin delos Santos
12. Florida Delipe
13. Tresito Depeno
14. Conrad Villas
15. Veronica Velarde
16. Rudente Tulaylay
17. Ma. Jesusa Elopre
18. Cesar Lumibao
19. Romeo Castro
20. Bercito Paasa

Barongbong, Port Barton
3 March 1997

1. Wenceslao Marikit
2. Merlito Perante
3. Valentin Cinco
4. Rogelio Pepito
5. Santiago Merikit
6. Clarita Perante
7. Marlon Mosanto
8. Salvador Betasolo
9. Luz de Villa Betasolo
10. Quirolinda Baguio
11. Edna Mondares
12. Lolito Mondares
13. Antonio Masong
14. Melchor Sulayao
15. Gina Betasolo

Albaguen Island, Port Barton
4 March 1997

1. Donato Golben
2. Romulo Lapore
3. Ignacio Pintuan
4. Seus Selcarina
5. Santiago Villamor
6. Aminigildo Bonola
7. Pepe Andaya
8. Zoilo Garpeza
9. Nonoy Ganansias
10. Jerry Pintuan
11. Pablo Ronda
12. Eddie Devanadera
13. Nelson Seleriana
14. Nardo Fortunado
15. Rebecca Curot
16. Lourdes Seleriana
17. Placido Ronda
18. Genorio Caspe
19. Junerito Curot
20. Charlie Sauro
21. Lolita Sauro
22. Rosalie Sauro

Pagdanan, Port Barton
5 March 1997

1. Federico Alejandro — Sitio Chairman
2. Rowel Amora
3. Charlie Villa
4. Danilo Asio
5. Jose Laroca
6. Edwin Bermodes
7. Romeo Villamor
8. Joel Alejandro
9. Bobby Recana
10. Nida Alimout
11. Junie Lapore
12. Ricky Jagonar
13. Francisco Villar
14. Adelina Asio
15. Primitiva Peros
16. Virgencita Vargas
17. Junick Gaan

Capsalay, Port Barton
6 March 1997

1. Rogelio Ballesteros — Sitio Chairman
2. Liza Talledo
3. Restituto Pasco
4. Leticia Arcano
5. Romeo Carbonilla
6. Laila Baga-an
7. Erlinda Niepes
8. Florencia Alamodin
9. Mila Carbonilla
10. Elenita Carbonilla
11. Feliciano Talledo
12. Raquel Legaspi

Barangay Proper, Port Barton
7 March 1997

1. Romeo Garganta Sr. — Barangay Captain
2. Alice Tan — Bgy. Secretary
3. Jonilyn Espartero
4. Arsenio Castanas
5. Cipriano Villamor
6. Magdalena Ballesteros
7. Anecia Castanas
8. Exequiel Canay
9. Peter Garcia
10. Carlos Lizaran
11. Patrocinio Sumerano
12. Efren Castanas
13. Remigio Cabiling
14. Sixto Haum
15. Amador Hermo
16. Reynaldo Augusto
17. Pecto Castanas
18. Pedro Angeles

19. Erlinda Haum
20. Nenita Ardenio
21. Corazon Fernandez
22. Jilma Cabiling

Pamoayan, Port Barton
8 March 1997

1. Toribio Berasio	Sitio Chairman
2. Anecito Granflor	Association President
3. Oscar Despe	
4. Raul Huerto	
5. Eddie Despe	
6. Jasmin Huerto	
7. Roselie Garcia	
8. Erma Casencia	
9. George Gallos	
10. Rey Daco	
11. Jimmy Gallos	
12. Estrelita Leido	
13. Avelino Llanera	
14. Perlicia Abis	
15. Norma Leido	
16. Milagros Juan	
17. Vilma Leido	
18. Dante Leido	
19. Adriano Villantes	
20. Teresita Edo	

Nao-Nao and Bigaho, Port Barton
10 March 1997

1. Maryjane Dioquino	Kagawad, Nao-Nao
2. Romeo Heredero	Kagawad, Bigaho
3. Edjoren Tomines	
4. Ramiro Echague	
5. Loreto Jardenero	
6. Sergio Garcia	
7. Milagros Manggao	
8. Elumelyn Echague	
9. Virgilio Marescad	
10. Nenita Garcia	
11. Letecia Cardejon	
12. Jenita Padios	

Baybay Daraga, Port Barton
11 March 1997

1. Venancio dela Cruz	Sitio Chairman
2. Josefina Melaya	
3. Urbana dela Cruz	
4. Carlita Devio	
5. Salvacion dela Cruz	
6. Arlene Lumukso	
7. Editha Halayahay	
8. Elena Boringa	
9. Erlinda Ellenan	
10. Illuminada Lucena	
11. Mylit dela Cruz	
12. Pacita Halahayay	
13. Felipe Ferrer	
14. Marilet dela Cruz	
15. Jinky dela Cruz	
16. Elean Atendido	
17. Amalia Boriraga	
18. Mila Malubo	
19. Anita Monzales	
20. Susan Impectana	
21. Gemma Halayahay	
22. Elvie Resas	
23. Marlyn Borinaga	
24. Rowena Suarez	
25. Pablito Villamor	
26. Vevencia Ducos	
27. Emily Canas	
28. Rogelio Norquero	
29. Dionila Melaya	
30. Amelio Lesnio	
31. Jenny Solana	
32. Grace Tayactac	
33. Teresita Suarez	
34. Miling Villamor	
35. Felicisima Borinaga	
36. Meolito Borinaga	
37. Alicia Malubo	

New Villafria
12 March 1997

1. Myrna Baquiran	Kagawad
2. Ernesto Bacuel	Kagawad
3. Moises Opeder	Association President
4. Alice Montecillo	PCSDS (observer)
5. Gina Dacut	
6. Tess Batul	
7. Luzviminda Besitulo	
8. Marife Opider	
9. Elvira dela Torre	
10. Ricky Bojos	
11. Jovita Bojos	
12. Angeles Abrina	
13. Baltazar Llaran	
14. Noli de Guzman	
15. Ramil Fernandez	
16. Lily Ello	
17. Aurea Pefianco	
18. Mariel Joy Baquiran	
19. Merlie Gepolla	

New Agutaya
13 March 1997

1. Eutiquio Francisco	VP, Association
2. Gerlito Gancayao	
3. Pedro Amora	
4. Mamerta Amora	
5. Alfredo Bulante	
6. Imelda Bulante	
7. Marjorie Obena	
8. Leonarda Francisco	
9. Erlinda Grajo	
10. Ricky Francisco	
11. Juan Dones	
12. Pantaleon Dones	
13. Victorio Obena	
14. Myrna Camoyao	
15. Freddie Nobleza	
16. Demetria Nobleza	

San Isidro
14 March 1997

1. Edwin Garcia — Association President
2. Severina Aban
3. Cedronio Aban
4. Pacifico Gesman
5. Hector Edep
6. Isagani Baaco
7. Perlito Edep
8. Suzette Alestre
9. Maria Garcia
10. Marianita Edep
11. Purita Edep
12. Gil Caabas
13. Rico Cachombo
14. Dowell Cabrestante

Sto. Niño
15 March 1997

1. Alfredo Garpeza
2. Monito Arreglo
3. Leopoldo Francisco
4. Eusebio Garpeza
5. Amelita del Corro
6. Melchor Sampiton
7. Dory Arreglo
8. Alger Pizon
9. Gobernador Arreglo
10. Crosbing Mekitpikit
11. Johnny Mekitpikit
12. Pancho Arreglo
13. Jeanette Garpeza
14. Pablito Malachico
15. Jocelyn Malachico
16. Teodora Arreglo
17. Linda Dolero
18. Luciano Francisco
19. Nonoy Muraca

New Canipo
18 March 1997

1. Virgilio Abrina — Barangay Officer In Charge
2. Vicente Gacayan
3. Benjamin Libarra
4. Edna Palao
5. Melvin Latube
6. Rolly Abad
7. Mylie Palao
8. Dulce Macalera
9. Gloria Tablazan
10. Fe Archedera
11. Noel Borbon
12. Ruth Velasco

Imuruan, Binga
19 March 1997

1. Amalia Espiel
2. Jovie Espiel
3. Decoroso Suplito
4. Juan Guerrero
5. Violeta Salonga
6. Juanito Luzares
7. Rizalito Sulana
8. Morlito Espiel
9. Marilou Padan
10. Rudy Gevena
11. Bobby Espiel
12. Prime Agravante
13. Dorico Navua
14. Romeo Guerrero
15. Paulito Romano
16. Ernesto Resnera
17. Judie Oyo-a
18. Luisito Dormiendo
19. Epifania Suan
20. Rolly Geroquin

Binga Proper and Boding
25 March 1997

1. Remedios Rio
2. Fe Vargas
3. Medelin Esmayan
4. Crispina Eredera
5. Elra Abayon
6. Disodada Buenafe
7. Angelita Talimbay
8. Lalita Rico
9. Mhori Techavez
10. Bertido Regona
11. Elias Rodriguez
12. Romeo Berondo
13. Federico Suplido
14. Gally Techavez
15. Lindy Sunico
16. Gony Ariago
17. Anita Aclan
18. Lina Carriedo
19. Marilou Roca
20. Imelda Maravillas
21. Angelita Montines

Cauban, Binga
22 March 1997

1. Delfin Carriedo — Kagawad
2. Reynaldo Rodriguez
3. Armando Luna
4. Romeo Duran
5. Artemio Arabis
6. Simplicio Punay
7. Nemsio Abordo
8. Primitivo Arbalate
9. Raul Leano
10. Romeo Rosete
11. Bernardo Pableo
12. Jose Punay
13. Federico Gonzales
14. Renerio Cabalejo
15. Florencia Manago
16. Shirley Abordo
17. Lucy Helves
18. Rosalinda Nire
19. Teresita Tulot
20. Socorro Tan
21. Gloria Arbalate